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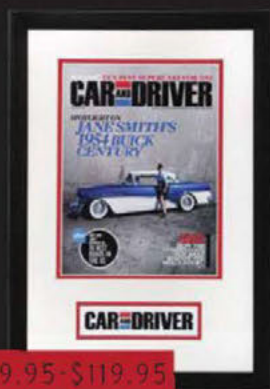
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pummel Pittsburgh.

*photography by  
Greg Pajo*





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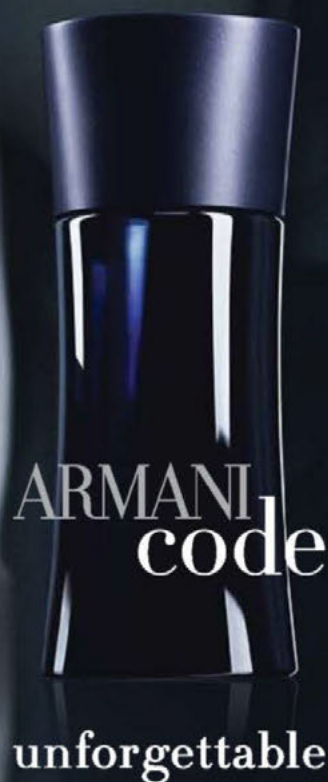
"Turbo" used to strictly mean turbo. Now?

**CARandDRIVER.com/2015CayenneTurbo**



Chris Pine

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## DEAR ED.

In your recent "New Cars for 2015" issue there was a mention that the 2016 Hyundai Genesis coupe was going to be redesigned. Are there any pictures of the new model available yet? Or if not, do you have an idea what it may look like?

JOHN E. MOLINARI, ESQ.  
FREEPORT, NEW YORK

No—Ed.

Land Rover Range Rover Evoque  
Autobiography Dynamic O'erwrought?

JOHN BROMER  
EASTON, CONNECTICUT

Erm, rather—Ed.

"2015 Jettas forgo the new Golf's MQB structure." So, which structure will they use? You have said previously that my 2014 Jetta uses an MQB chassis with independent rear suspension.

DON WALKER  
TORONTO, ONTARIO

We've never said that the Jetta is on MQB, mostly because it's not—Ed.

Is the Chevy Trax replacing the Captiva? If not, what is the major difference between the two models? Will Chrysler continue to produce the Town & Country minivan, or does discontinuing the Dodge Grand Caravan in 2015 mean the demise of the minivan by Fiat Chrysler altogether?

PHIL HELLER  
EFFINGHAM, ILLINOIS

The Buick Encore-based Trax isn't replacing the warmed-over Saturn Vue known as the Captiva. The Captiva, which was only sold to fleet customers, is dead for 2015. Speaking of the dead, while Dodge's version of the minivan is dead, the Chrysler T&C lives on, as does the Ram Cargo Van—Ed.

I was going to buy a new Volkswagen GTI but am now considering the BMW 228i, six-speed manual of course. Thoughts? Or should I just rough it in a Ford Fiesta ST and save \$15,000? Torn.

BRIAN CODY  
HUNTINGTON BEACH, CALIFORNIA

Let these words of Otto von Bismarck guide your thinking: "The great questions of the day will not be settled by means of speeches and majority decisions but by iron and blood"—Ed.

In other news, how exactly do Porsche 911 GT3s "window their engine blocks and catch fire"?

MAKANJU MAXIE  
CHICAGO, ILLINOIS

Defective connecting-rod fasteners break and the whirly bits find their way out of the block along with engine oil, which sprays onto hot exhaust manifolds—Ed.

## FREE-MARKET COMBUSTION

In Kevin Cameron's "On the Persistence of the Internal-Combustion Engine" column in September, he accidentally makes the case for the current infusion of electron propulsion. Motors are simpler, more efficient, offer better performance, make polar bears happier (unconfirmed), and receive significantly fewer government subsidies than their Dino-blood cousins. Did you know the oil industry received more than \$20 billion in 2013 alone, whereas electric-vehicle subsidies are around \$7 billion? I agree that the petrol peddler will be around for decades to come, but given the introduction of electron power at nearly every automaker, *Car and Driver* better gear up the "Save the Engines" campaign immediately.

JOHN MICHAEL MONTEITH  
KIRKLAND, WASHINGTON



## COVER LETTERS

If you put another 2015 Corvette on the cover of your magazine your readers will start to think that GM is your new publishing company.

KURT KUCZEWSKI  
LIVONIA, MICHIGAN

Don't worry, Kuczewski. We've moved on to the 2017 Corvette—Ed.

"Why the Occupy movement exists." Since when?

STEPHEN BOND  
GROVE CITY, FLORIDA

I hate that you felt the need to inject politics into a car magazine, but if you're going to do so, at least get your facts straight. The "Occupy" movement is a result of too many spoiled brats going to expensive liberal-arts schools on mommy and daddy's dime who resent that those going into the business world will likely earn more than them, never mind the fact those evil businessmen inevitably bust their asses working long hours, often risking their own capital to build and grow a business, employing people and paying lots of taxes along the way, and generally contributing more to society than any "Women's Studies" major could ever hope to do. So all in all, pretty much the same reasons that got King Obama elected twice.

JAMES PRUDENTE  
HUNTINGTON, NEW YORK





My September issue arrived mid-month, and I'm happy to report that it was worth the wait. Guest columnist Kevin Cameron made more sense than anyone else on your editorial staff has in at least the last five years. His faith in markets, and good old-fashioned consumer common sense, is refreshing in a toxic social/cultural climate dominated by political correctness enforced by both government and social-media trolls. Please, Ed., more please. Brock "The Assassin" Yates would be proud.

**MARK NAHMIA**

SAN TAN VALLEY, ARIZONA

Kevin Cameron's column reminded me of a Kurt Vonnegut quote, "We could've saved the earth but we were too damned cheap."

**MARK BRIGGS**

FREDERICKSBURG, PENNSYLVANIA

If you do nothing else right (and that's a real stretch), hire Cameron. Dump Phillips or Robinson, or both, but get Cameron on board. What a breath of fresh air.

**KEN MORGAN**

FOUNTAIN VALLEY, CALIFORNIA

Mr. Kevin Cameron, regarding your recycled "defense" of old internal-combustion engines, this type of blind

vision built the trap we exist in today: needing genocidal asphalt and concrete (poured over food land), gritty gridlock, and war-causing gas-hog "prime movers."

Emerson said more than 100 years ago, "Carriages have amputated our legs."

So we rebel against the car trap and now run marathons by the millions. We reclaim the body the prime mover had given to us more than 50,000 years ago. Use it or lose it.

**JOHN BRADY**

MANASSAS, VIRGINIA

*That took an odd turn—Ed.*

Screw engines. I will be 61 next month. I was promised a flying car. I want my flying car.

**JEROME BOYLE**

OMAHA, NEBRASKA

### THE BUCK STOPS HERE

So Alan Mulally made more than \$23 million as head of the Ford Motor Company last year ["Money Makers," September 2014]. This man—who presided over the world's largest aircraft and aerospace company through times of unparalleled growth and prosperity, ran the world's fourth-largest automotive company, profitably and without government assistance, through the worst period in that industry since the Great Depression—made nearly as much as a 25-year-old college dropout who is pretty good at throwing a ball through a hoop. That is truly obscene.

**LARRY WILSON**

TACOMA, WASHINGTON

*Wilson, that was an obscenely long sentence you wrote there—Ed.*

It is good to see the moneymakers doing so well. They've earned it. However, inserting the "My Minions" part about entry-level employees making \$16 an hour is an attempt to support envy and jealousy among the readers who would do well to remember that these moneymakers know what they have done to be successful and the rest of us know

what we have not done. The more successful, visible, or powerful you become, the more you will be negatively gossiped about. Success breeds envy, and envy breeds the desire to destroy what is envied.

**BURT HARWOOD**

INTERNET HELICOPTER

I got the impression from Benjamin Preston's article on auto-industry CEO pay that he might be a left-leaning Obama Socialist. The left has a habit of trying to demonize successful people, except if they're liberals. There is no refuting the statistics regarding the high pay ratios. But as a Ford stockholder, I believe Alan Mulally is worth every penny he's paid. Ford didn't take a government bailout, like GM, and as a result Ford has become one of the most profitable Fortune 500 companies in the U.S. And, the Ford "line" workers share in Ford's profits. Mr. Mulally is responsible for turning a stagnant company into a forward-thinking, inclusive organization. Sergio Marchionne is doing the same at Fiat Chrysler. Fortunately, the U.S. is a capitalist economy, and thank God for that. Please remind Preston that there has never been a successful Socialist economy. I'm looking forward to Preston's next article comparing George Soros's and Tom Steyer's pays with that of their administrative assistants.

**LARRY ROSE**

CHAGRIN FALLS, OHIO

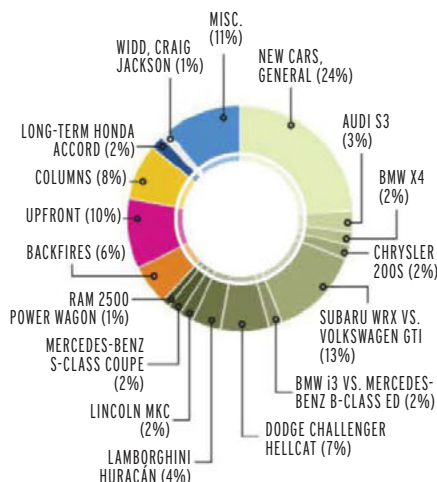
*Let us pause here for a fact-check break.*

*While Ford didn't take money from the Troubled Asset Relief Program, as did GM and Chrysler, it did take \$5.9 billion in federal loans in 2009 from the Department of Energy—Ed.*

### CRATE EXPECTATIONS

While the various manufacturers tend to avoid the subject, there is no uniform standard for horsepower and torque ratings in the "crate engine" world ["Kick in a Box," September 2014]. For example, many of the original small-block Chevy

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derivations tend to reflect the old SAE gross standard, while the newer derivations (e.g., LS-based) tend to reflect the SAE net standard. Your “horsepower per dollar” analysis has no empirical meaning because this variable wasn’t considered.

With both engines equally outfitted (e.g., exhaust headers, engine accessories, air cleaner, and tested to the same atmospheric standards), GM’s 327-hp LS327 Deluxe (part No. 19244096) is going to make a whole bunch more power (and torque) than GM’s 330-hp, 350 HO Turn-Key (part No. 19210009).

**ROBERT J. ANGELI**

PORTSMOUTH, RHODE ISLAND

*Angeli, please take your copy of the September issue of Car and Driver and add the word “claimed” somewhere on page 28—Ed.*

#### ABBREVIATED SHOWDOWN

Daniel Pund intimates that Ohio is in the South twice in his “Legends of the Cedar Falls” comparo [September 2014]. Why?

**HAL STOKES**

HIRAM, GEORGIA (IT’S IN THE SOUTH)

*Y’all wouldn’t understand—Ed.*

Here I am looking at replacing my Volkswagen GTI with a rear-wheel-drive car of some kind, and everyone is talking about how good the seventh-generation GTI is. I am beginning to second-guess myself and wonder if I should get the new GTI!

**MARK SHAKESPEARE**

SANTA MARIA, CALIFORNIA

Daniel Pund’s WRX and GTI comparison left me with this conclusion: The VW is for guys who remember they used to have fun driving but really want to drive their wife’s car most of the time. The WRX is for guys who still want every drive to feel like a special stage.

**ALLAN RANSOM**

APPLETON, WISCONSIN

I think you and the new VW GTI should just get a room. I’ve faithfully test-driven each new generation of the GTI and always come away unimpressed. It’s a

very nice—if way overpriced—economy car, and nothing more. I bought the Fiat 500 Abarth instead and enjoyed my free track day at Daytona.

**DAVID DICKS**

ST. LOUIS, MISSOURI

I have long held my tongue on all of the VW-Audi praise that most magazines have been bursting with for a few years, but this is just too much. I understand that you guys have to call them the way you see them and ignore the real-world implications of buying such vehicles, but that’s an entirely different topic. Talking about the WRX versus GTI comparo—you guys actually thought it was relevant to compare fuel economy and cargo space? Of course four-wheel drive is worse on fuel! Of course a hatch is better on space! Totally apples and oranges there. I’ll mention some other “irrelevant” info to add to the pile: things like potential power (the GTI is near front-drive limits on usable power, see Ford Focus ST), reliability, durability of interior, and resale. There is a reason my nice, stock, trouble-free “pig-nose WRX”

sold for double what a similar-year GTI would sell for—good thing I didn’t listen to you guys eight years ago.

**BRETT STAHL**

CHARLOTTE, NORTH CAROLINA

#### BOX SET

Boy, who’d have thought the BMW guys would be snooping around my garage for the i3’s inspiration [“Electric La-La Land,” September 2014]. Skinny 155 tires from 1969 MG Midget? Check. Weird suicide rear door and rubber-duffy interior from 2007 Honda Element? Check. I probably should have hidden the electric lawn mower.

**STEVE ALEXANDER**

CENTRALIA, ILLINOIS

#### AUDI DUTY TIME

In the Audi S3 review [“Li’l Bro,” September 2014], Mike Duff tells us the S3 doesn’t have the S4’s “six-cylinder soundtrack.” Surely, one could be added to the “sound-enhancing” system. Maybe I could get something like that for the family’s Toyota Camry hybrid.

**DOUG ALLAIRE**

IOWA CITY, IOWA

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## AZTEK CULTURE

Ha-ha. Pretty funny! A joke BMW, the X4 ["Coupified!"] September 2014! It's better than the Aztek! LMAO! Keep up the good work!

**JACK WILLIAMS**  
TUCSON, ARIZONA

Regarding the BMW X4 and the like: People want to sit high and appear stylish, so they buy an SUV at a substantial premium over the equivalent car. They rationalize it by touting all the extra "utility." Then, in a misguided attempt to appear even more stylish, they pay an additional premium to remove all that utility, leaving them with basically a 3-series with a \$10,000 lift kit and instant recognition as a "trophy wife."

**TOMMY THE DUCK**  
CYBERSPACE THEATRE

At last! A replacement for all those aging Azteks.

**BUKKA DAVE**  
AVON, ILLINOIS

## DIVINE COMEDY

In "Beelzebubba" [September 2014], Andrew Wendler wrote this about the great supercharger and exhaust notes mixed together: "Combined, they produce a visceral and foreboding effect, the automotive equivalent of dropping the needle on a well-worn vinyl copy of The Stooges' *Fun House*."

I think maybe one person out of a thousand has ever heard this record, much less a well-worn copy. How about some more relevant metaphors, like an earthquake? Roaring lion? Cannon fire? I can literally think of a thousand before finding a way to compare The Stooges to the sound of a Hemi in a muscle car.

**CHRIS SKALSKI**  
ONLINE ROLLER RINK

Really? The Dodge Challenger SRT Hellcat "is the stuff of redneck dreams"? To me, that line cuts down the SRT Hellcat. But I do like "and everyone else's nightmares."

**RIC STIGH**  
CORNELIUS, NORTH CAROLINA

I've contemplated writing notes to you on several occasions but always lost the urge. I couldn't help myself this time, though. How is it that some gearhead knows the historical/religious significance of a tritone (Beelzebubba)? Keep writing this stuff and I'll keep buying it. Excellent work, C/D!

**DAN STEINHILBER**  
WINNIPEG, MANITOBA

I'm certain the Dead Milkmen appreciate your promotion of their 1988 album, *Beelzebubba*.

**MIKE HULBURT**  
HARPERS FERRY, WEST VIRGINIA

Whoever created the headline "Beelzebubba" deserves a bag of pork rinds, a case of PBR, and a Pulitzer.

**ANDREW YBARRA**  
CEDAR PARK, TEXAS

*See, I told you at least three readers would get that reference. Pay up, Robinson—Ed.*

## MARKED DOWN

Did a Lincoln Town Car run over Quiroga's head when he was a kid or was it a Pinto? You can always expect a negative article from him regarding any Ford product. Although his article on the Lincoln MKC starts off with the headline "The Lincoln is strong with this one," his first sentence says the Lincoln is based on the Ford Escape ["Escape Hatch," September 2014]. He alludes that Audi and Acura also rebadge luxury cars but fails to mention that GM rebadges

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everything from Buicks to Cadillacs, and GMC, whose every product is a re-blinged Chevrolet! He then says that Lincoln stole the exterior styling from the Q5 and the interior is borrowed from the MKZ, which “barely whimpers luxury.” And then he

## LETTER OF THE MONTH

So let's see. A 3 and a 5 have 4, unless it's a GT, which has 5. A 2 is still 2, but so are a 4 and a 6, unless it's a GC, then it's a 4. An X is more (unless it's less roof), an X M is oh so much more, but an x is not an X. An i in front of a number means hybrid, but an i after a number means gas. Okay, I got it.

**ANDREW GIBSON**  
SAVANNAH, GEORGIA

also mentions “another unimpressive number,” the 2.3-liter MKC's 4000-pound curb weight, although he seems perfectly okay with the 4300-pound weight of the BMW X4 on page 56!

To me the new Lincoln MKC is attractive inside and out and priced thousands of dollars less than the competition. Let's hope it will help regain much-needed sales for the Lincoln brand.

**BRUCE EASTBURN**  
MIDDLETOWN, DELAWARE

## TWO DOORS DOWN

The Mercedes S-class coupe is “why the Occupy movement exists”? Some might agree, but I'm afraid that the Benz design team has foiled your class-warfare-based analysis of its newest creation [“Crystal Baller,” September 2014]. I mean, why else would it make it look exactly like a Buick from the backside, surely the only angle that we the peasantry will ever see?

**MIKE WILLIAMS**  
ALBUQUERQUE, NEW MEXICO

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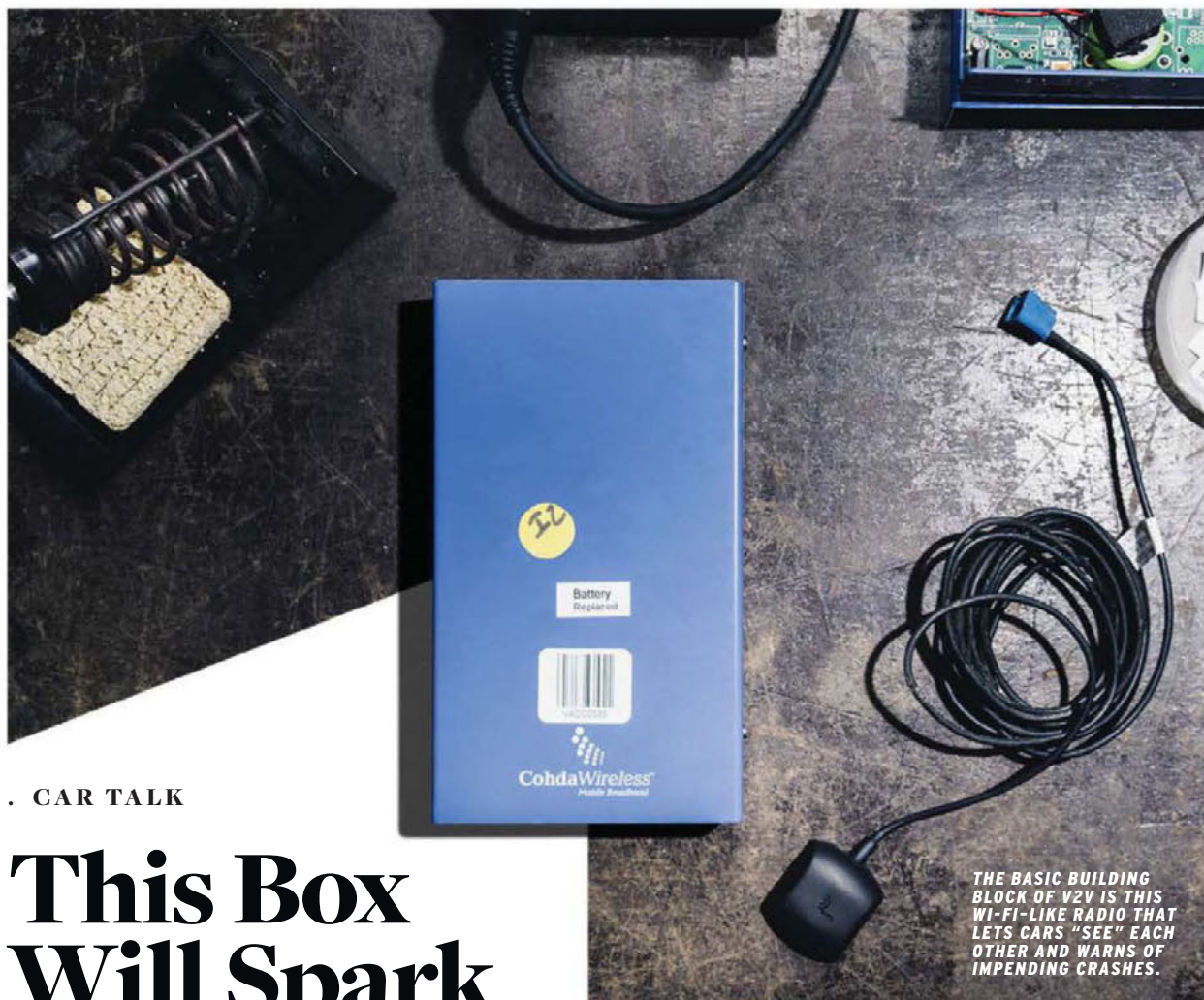


★ YELLOW FEVER

*"If you tell the driver how many seconds there are left in a yellow light, they run it every time. That's not the information they need. They need a yes or no decision."* —Debby Bezzina, University of Michigan Transportation Research Institute

# upfront

□ edited by JARED GALL



• CAR TALK

## This Box Will Spark a Safety Revolution.

CONNECTED CARS MAY REEK OF THE COMING APOCALYPSE, BUT THEY COULD BE A BIG BOON TO SAFETY.

by Clifford Atiyeh

WE'VE SEEN HOW OUR ROADS WILL WORK 40 YEARS from now, and the future might not be so terrible after all, at least from a safety perspective. Contrary to sci-fi visions of robotized roadways, the University of Michigan Transportation Research Institute's (UMTRI) version of tomorrow says drivers are still in control and still use gas pedals and steering wheels. The critical difference is that lapses in, or the outright lack of, judgment will be mitigated by cars that think ahead of you. It's deceptively simple: Attach GPS sensors to every vehicle and street and program the cars to continuously broadcast their positions and sound alarms if a collision is imminent. String enough data together and you have a ground version of air-traffic control potentially so effective that driving will be no more deadly than ordering fried chicken. Or even possibly a salad.

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Such vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) networks—the former allows vehicles to notify each other of speed, location, and the like; the latter lets them correspond with stoplights, construction signs, etc.—are already running in select cities. They're working so well that the federal government wants to mandate basic connectivity on all new light-duty and commercial vehicles, likely within five years. By the time it achieves critical mass, V2V could be the greatest automotive safety advance since stability control.

Of all the high-tech demo vehicles available to UMTRI, we find ourselves in the back of a rumbling Ford Econoline. Debby Bezzina—a lead researcher on the \$32.1 million V2V pilot program in Ann Arbor, Michigan, the largest of its kind—is giving us a guided tour. Funded in part by the National Highway Traffic Safety Administration (NHTSA), the Ann Arbor program is an ongoing experiment involving more than 2800 vehicles and 73 lane-miles in the northeast part of the city. Within the next three years, UMTRI intends to expand it to 9000 vehicles, and within five years it will work with other organizations to link 20,000 vehicles and blanket all 28 square miles of Ann Arbor with full V2I coverage. It's also planning to install sensors across 120 miles of metro Detroit freeway.

As we approach an intersection, a display tells us whether or not we'll make it before the light turns red. Another driver in a connected vehicle about 200 feet ahead slams on his brakes, and almost instantly the van flashes a panic-stop warning. As we enter a curve near the university hospital, an area with the city's highest rate of runoff

crashes, a speed warning appears. Back on campus, a moisture sensor embedded in the asphalt simulates an alert for icy conditions.

Radar-scanning crosswalks beam pedestrian alerts to bus drivers, who see notifications the moment someone activates a crosswalk signal. Roy Goudy, a senior engineer at Nissan who helped monitor eight Infiniti M37s in the pilot, calls V2V “potentially revolutionary.”

Nine automakers—Ford, General Motors, Honda, Hyundai, Kia, Mercedes, Nissan, Toyota, and Volkswagen—supplied a total of 64 cars with factory-integrated V2V systems. Honda and BMW contributed six motorcycles. Another 300 cars have aftermarket devices wired to their electrical systems with warning displays integrated into their rearview mirrors or dashboard displays. The last 2450 vehicles, including heavy-duty trucks, have the cheapest, easiest methods of starting a V2V network; they simply broadcast their location but don't receive any alerts.

**V2V  
ALERTS**

For now, developers are focusing on blind-spot, lane-departure, and forward-collision alerts, all of which would augment (or outright replace) existing systems. But there are many other potential uses for V2V, including warning drivers turning left of oncoming traffic or those nearing a green light of an approaching red-light runner.



**RADIO SIGNALS** are the key to V2V communication. A 75-MHz band in the 5.850- to 5.925-GHz range (just above what home cordless phones use) will provide instant connectivity with surrounding vehicles and roads. Existing cellular and satellite networks, with their clogged bandwidth and all-too-familiar dead zones, won't be able to keep up with V2V alerts. Instead, each car will be fitted with a dual-band radio similar to a Wi-Fi transmitter. Relying on a GPS sensor, this radio sends and receives 10 location signals (or alerts and road info) per second. Encrypted security certificates, much like what your web browser uses when you shop online, ensure the driving data is genuine. They're issued by a protected central server (at Oak Ridge National Laboratory in Tennessee) and renew every five minutes to prevent long-term vehicle tracking and potential hacks. In the Ann Arbor pilot program, small roadside radios in weatherproof boxes [see “Shopping List”] attach to traffic-light poles at curves and intersections; they're connected to the traffic-control center and other traffic lights throughout town.

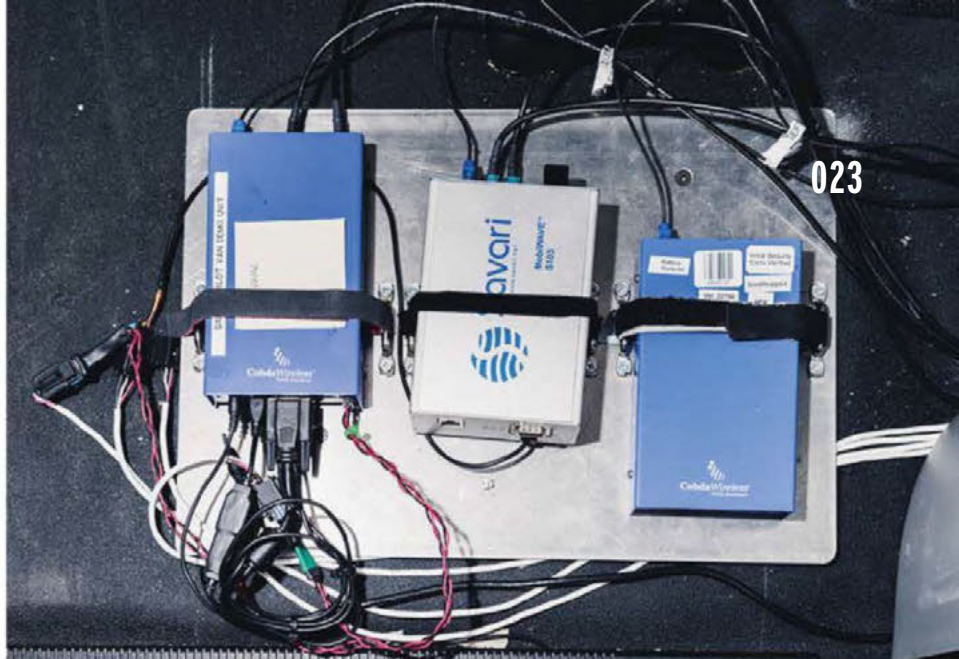
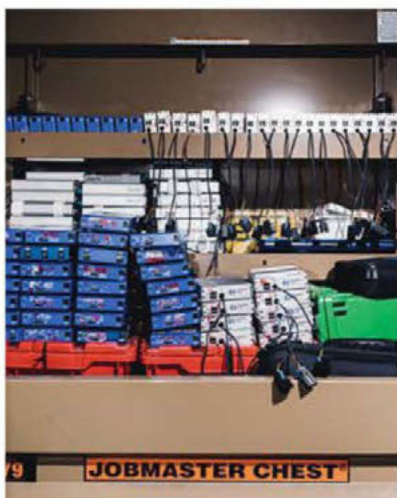
“When you put radar on a car, you see other vehicles right away. When you put V2V on a car, you only see other connected vehicles,” said Mike Shulman, technical leader of Ford global driver assistance and active safety. “We'll be fusing them together when that's available.”

And while it will take time to reach meaningful acceptance in the U.S.'s fleet of more than 250 million light vehicles, the adoption rate wouldn't be limited to just the 15 million to 16 million new vehicles purchased every year. None of the pilot vehicles, including our van, rely on built-in cameras, radar, or LIDAR. Instead, they use radio signals between vehicles [see “Codetalkers,” above]. That means anyone with a used car could upgrade to a full suite of functions that work in real time and are less handicapped by poor weather or visibility.

As the government sees it, V2V will cost automakers about \$329 and 3.5 pounds of extra mass per car if it starts rolling out in 2020. (NHTSA estimates it will take until 2058 to reach full national fleet penetration.) Running the network will cost \$60 million per year, which could be covered by a \$3 fee on each new-car sale. If only two intersection-assist features

← An attentive driver might not need these alerts. You are now free to move about the cabin.





↑ Above: Development vehicles use setups like this to record when alerts are sounded and to refine the warning parameters.

tion. The Federal Communications Commission hasn't blocked the V2V frequency from other wireless devices, which could open the airwaves to interference at best or condemn the whole thing to failure at worst. The Society of Automotive Engineers hasn't completed its proposed V2V standards, and the Institute of Electrical and Electronics Engineers still needs to agree on network protocols, particularly

to convince us that the NSA won't be monitoring our every move and tracking us as we drive. That likelihood is remote. No consumer V2V component currently in development stores any information; they simply transmit locations and speeds and send alerts when they detect an imminent collision.

Either way, the system would need to be impenetrable; a hacked V2V infrastructure could incite unprecedented chaos. Then there's the issue of personal choice. Could we defeat the system with an off switch? Opt out of certain alerts? Will V2V networks be run by local municipalities, or will monoliths like Google and Verizon win lucrative government contracts and force us to play ball?

These are heavy, consequential questions that must be answered. For all the work that goes into protecting vehicle occupants in a collision, the most effective safety technologies are those that reliably prevent crashes in the first place.

## SHOPPING LIST

*Compared with autonomous cars, that other major in-the-works safety tech, V2V is awfully simple, with only a few basic requirements.*

### ROADSIDE TRANSMITTER

Roughly 10x10 inches, this transmits short-range dual-band radio signals (one band for transferring security certificates, the other for alerts) good for 1000 feet in clear weather and unobstructed areas. It attaches to a traffic-light pole.



### IN-CAR EQUIPMENT

With the same specs as the roadside transmitter, the in-car unit is smaller since it doesn't need a weatherproof case. Slightly bigger than an external hard drive, it installs easily in the trunk. A combo GPS-and-antenna fin goes on the car's roof. It requires no bumper or grille-mounted sensors, so it's unlikely to be damaged in an accident. In practice, researchers envision there being four kinds of in-car devices:

**1. Vehicle-Awareness Device.** This has no connection to the vehicle or capability to process or display alerts of any kind. It is simply a radio transmitter that broadcasts basic information like location and speed to other vehicles.

**2. Aftermarket Safety Device.** This will allow almost anyone to retrofit his or her older vehicle with full V2V functionality. Safety messages are sent and received, and appropriate alerts are provided to the driver.

**3. Retrofit Safety Device.** Wired into the vehicle's CAN-bus electrical system, this will require the cooperation of automakers to open up their proprietary vehicle networks to these devices.

**4. Original Equipment.** Integrated from the factory into the vehicle's dashboard, these will use LED lighting, infotainment systems, and other displays and audio functions. They'll also merge V2V data with existing driver assists that rely on cameras, radar, and other sensors.



### A SENSOR IN EVERY POCKET

NHTSA, as well as Honda, is exploring the possibility of vehicle-to-pedestrian communications (V2P). Considering how often the average smartphone buzzes, beeps, and displays messages, it's unclear how this could actually warn a bicyclist or a pedestrian who's about to move in front of a vehicle, but that's not stopping Honda from working on some of the first V2P systems. And if drivers don't have to pay as much attention, why should pedestrians?

proliferate, NHTSA estimates they could prevent up to 592,000 crashes and save as many as 1083 lives each year.

Once it's well oiled and running smoothly, V2V could eventually save us more than \$201 billion in accident-related costs each year. And unlike autonomous driving, V2V isn't stirring lawyers into a tizzy. There will be lawsuits over system errors, but for now, NHTSA and the automakers we spoke with haven't raised any major concerns.

Some car companies are already implementing connectivity measures. The 2017 Cadillac CTS will be the first GM vehicle to offer limited V2V alerts. Honda is developing an automatic lane-change system fed off a V2V network. It's also making mobile apps that could warn pedestrians and bicyclists of an impending collision.

But for all of V2V's momentum, there are still plenty of obstacles to its full-scale adop-



## A 467-HORSEPOWER LINE IN THE SAND

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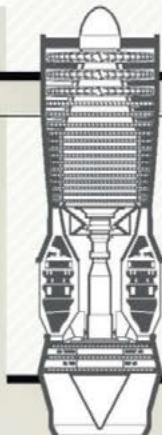
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Options shown. 1. Ratings achieved using the required premium unleaded gasoline with an octane rating of 91 or higher. If premium fuel is not used, performance will decrease. 2. Available Winter 2015. ©2014 Lexus.



Jet engines consist of a compressor and a turbine connected by a shaft, just like a turbo. As in any engine, they compress air and burn it with fuel. The hot, expanding gases spin the turbine, which in turn spins the compressor, drawing in more air. (Modern jet engines, called turbofans, generate about 70 percent of their thrust from a ducted fan, or a many-bladed propeller inside a cylindrical shroud ahead of the compressor. The turbine also spins this fan.) What you bolt to your creation and how is up to you. Below are just the basics.

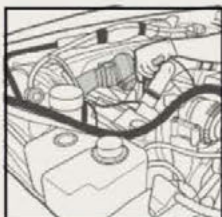
# Make a Jet Engine, Cheap

USE A TURBOCHARGER TO HOP ON THE HIGHWAY TO THE DANGER ZONE—OR AT LEAST TO THE EMERGENCY ROOM. *by K.C. Colwell*

THE GAS DYNAMICS that make a turbo such a fine way to boost an engine's output are the same ones you'll find in a turbojet. In other words, any turbocharger can be converted into a jet engine. But hold on a sec, Tex: Not everybody should try it. On Revell's three-step scale of model-building difficulty, this probably rates about a 13. Decent welding skills and a cautious, measure-thrice mentality are required. For an idea of just how badly this conversion can go, search "colinfurze burnt" on YouTube.

## STEP ONE:

Find a suitable turbocharger. We recommend going to a junkyard and stripping one from a diesel. The bigger the turbo, the more thrust it'll make. A turbo with a 4.5-inch compressor inlet can yield as much as 350 pounds of thrust. Make sure you pick a turbo that turns freely and has all its blades intact, with no signs of heat stress. Avoid variable-vane turbos, as they'll only add unnecessary complexity.



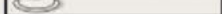
## STEP TWO:

Disassemble and clean.



## STEP THREE:

Reassemble and mount to whatever contraption you plan to power. A bench is a good idea in the R&D phase.

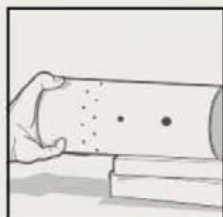


## STEP FOUR:

The heavy fabrication phase. First up: building the flame tube. This is where the fuel (Step Eight) mixes with the compressed air and is ignited. Use the internet (many sites are dedicated to this hobby) to determine the precise dimensions to maximize the thrust for your particular application. A rough ballpark: Flame tube diameter = 2x the diameter of

compressor intake. Flame tube length = 6x the diameter of compressor intake.

Drill holes in the flame tube. Again, the internet can help with this, but the diameter of the holes should increase approaching the turbine inlet. The total area of the holes should equal that of the compressor's intake.



## STEP FIVE:

Fabricate the combustion chamber to house the flame tube. The tube should be about 1.2 inches larger in diameter than the flame tube, regardless of the intake diameter. Make it just long enough to fit the flame tube and connect to the turbine. Plumbing flanges work well for end plates. Full welds are required.



STEP SIX: Attach the combustion chamber to the turbine inlet.



## STEP SEVEN:

Connect the compressor outlet to the combustion chamber. Use steel tubing or high-temp silicone hose the same diameter as the compressor output. Plumb this tube at 90 degrees to the combustion chamber and slightly off-axis, so the air swirls around the flame tube.



## STEP EIGHT:

Construct fuel, oil, and ignition systems. The turbo's shaft typically rides on a thin layer of oil. You will have to keep the oil flowing and cool. A turbojet can run on propane, kerosene, diesel, or jet fuel (Jet A). Jet A will give you the most thrust, but propane is the easiest because it's under pressure and quick to vaporize. Either way, you will need an ignition source, such as a spark plug. If your fuel is diesel, kerosene, or Jet A, you will need propane to serve as a pilot to get the combustion chamber up to operating temperature and eventually ignite the oil. It's a good idea to meter as much of this as possible. Install gauges to read fuel pressure, combustion-chamber temperature, and turbine temp.



## STEP NINE:

Build a starter. Leaf blowers work well for this.



STEP TEN: Double-check all your fittings before you attempt a start.

## STEP ELEVEN:

Turn on the ignition and fuel systems. "Throttle" the jet with fuel. Oh, and wear eye and ear protection. These things are dangerous and crazy loud.

**NOTE:** Many details are missing. You can use this guide as a starting point, but additional fabrication, plumbing, and design is strongly recommended. And make sure to count your fingers after every experiment.

**TOPICS DISCUSSED IN THE PREPARATION OF THIS ISSUE:** TURTLE BLOOD, KIMONOS, OLD DADS, K.C. COLWELL IS NOT IMPRESSED, SMARMY WONKA, "DON'T STAND SO CLOSE TO ME," THE CHEVROLET HHR SS, HUFFING NITROUS, FLAT-BILL HATS, HAPTIC SYRUP, JDM CIGARETTES, DANNY TREJO, HEADLIGHT PAINT, THE DODGE TOMAHAWK, VAMPIRE TATTOOS, HAIRY EYEBALLS, THE GIVING TREE, ARRR AND DRIVER (THE PIRATE EDITION), THETA D, SHADOW PUPPETS, DOING A "MICHAEL JACKSON," COTTAGING, INFRARED FLATULENCE, BELLY RUBS, "VOICES CARRY"





# Diamonds & Steel

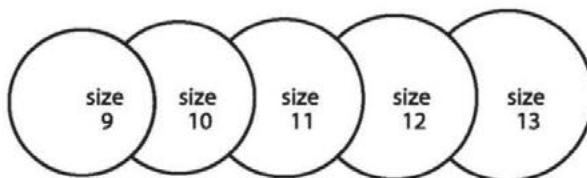
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Top 10 platforms' share of global sales:



# Architectural Digest

GLOBALIZED PRODUCT DEVELOPMENT MEANS MORE MODELS THAN EVER ARE SHARING UNDERPINNINGS. *by Jeff Sabatini*

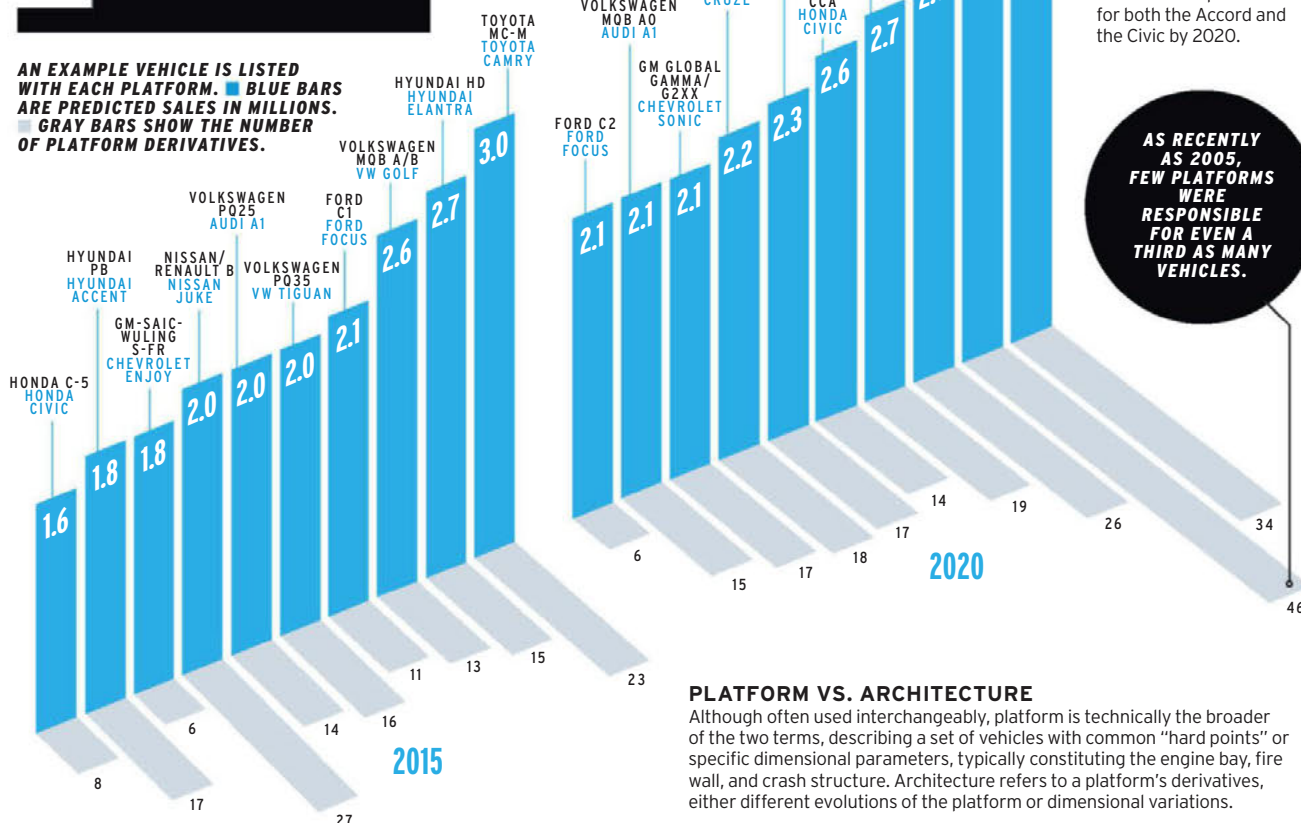
PLATFORM SHARING USED to be simple. You slathered a Toyota in leather and fake wood, filled every crevice with sound deadening, swapped out a few body panels, and stuck a Lexus badge on the trunk. Or, if you were GM, you might have skipped a few steps and gone right to the upscale-badge part. But today, nobody operates so simply or crudely.

Most manufacturers' portfolios are filled with vehicles that share significant parts of their makeup. In some cases, one basic layout begets multiple body styles and sizes, sold by several brands at vastly different prices in markets all over the world. It must be working, as the largest global players are increasing the numbers of vehicles sired from common platforms.

The advantages of this approach for the carmakers are obvious: economies of scale, not just in manufacturing but also in design, engineering, and regulatory compliance. For the consumer, it means smaller, less-expensive cars are often built to a higher standard if the platform trickles down from a more premium product. But all this winning carries its own hazard: Recalls ripple across many more models and vehicles than in the past, amplifying the fallout from a quality problem.

What follows are graphs projecting the 10 biggest-selling global platforms for 2015 and 2020, as calculated by the industry analysts and forecasters at IHS Automotive.

AN EXAMPLE VEHICLE IS LISTED WITH EACH PLATFORM. ■ BLUE BARS ARE PREDICTED SALES IN MILLIONS. ■ GRAY BARS SHOW THE NUMBER OF PLATFORM DERIVATIVES.



AS RECENTLY AS 2005, FEW PLATFORMS WERE RESPONSIBLE FOR EVEN A THIRD AS MANY VEHICLES.

## PLATFORM VS. ARCHITECTURE

Although often used interchangeably, platform is technically the broader of the two terms, describing a set of vehicles with common "hard points" or specific dimensional parameters, typically constituting the engine bay, fire wall, and crash structure. Architecture refers to a platform's derivatives, either different evolutions of the platform or dimensional variations.



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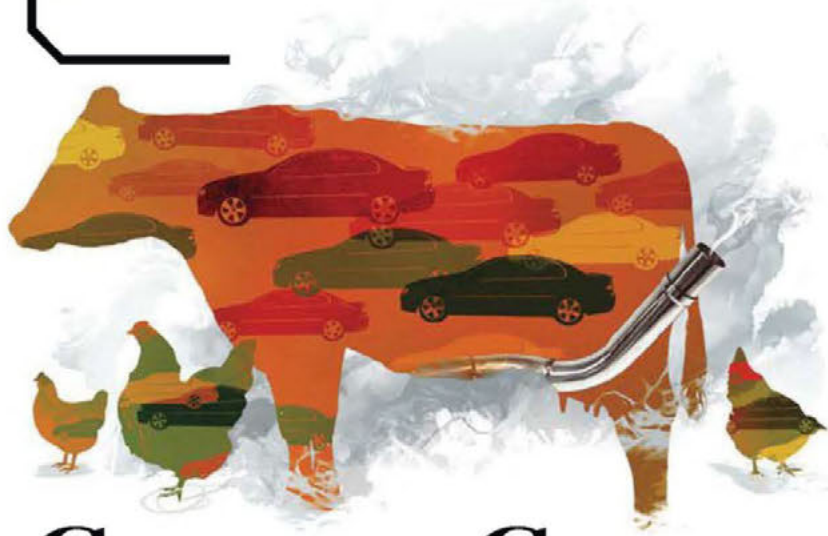
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# Cows vs. Cars

EVERYONE'S WORRIED ABOUT CAFE NUMBERS. MAYBE WE SHOULD WORRY ABOUT THE CAFETERIA. *by Jared Gall*

SOMEWHERE IN DETROIT, an engineer is working late, sweating combustion efficiency and catalysts to diminish the emissions from his company's next bestselling car. He steps out to grab a chicken sandwich for dinner. Maybe he realizes it, maybe he doesn't, but that sandwich is his environmental ally.

Recently, a team of researchers led by Gidon Eshel from Bard College in Annandale-on-Hudson, New York, and Alon Shepon at Israel's Weizmann Institute of Science weighed the full environmental impact of farming, from animal flatulence to emissions associated with feeding, transporting, and processing. They concluded that beef is "about one order of magnitude" (roughly 10 times) worse for the environment than other meats. Per calorie, it requires 28 times the land and 11 times the water, and, of particular interest to us, it generates five times the greenhouse gas (GHG)

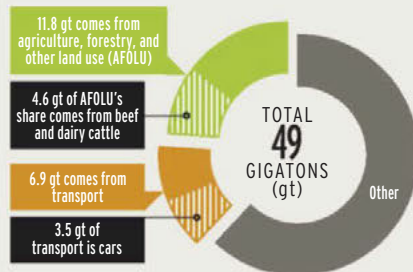
GHG than the drive to the restaurant.

But you can imagine how well we Americans would respond to the government telling us what to eat. In an interview with British newspaper the *Guardian*, Eshel suggested reducing subsidies for meat production. "I would strongly hope that governments stay out of people's diet," he said, "but at the same time there are many government policies that favor the current diet in which animals feature too prominently."

In cutting subsidies, he said, "you are having less government intervention in people's diet and not more." And, compared with changing what or where or how often we drive—or, say, dramatically cutting emissions from the entire national vehicle fleet by 2025—cutting or reducing beef consumption is, in Benton's words, "low-hanging fruit."

## ★ EAT MORE CHICKEN

THE INTERGOVERNMENTAL PANEL on Climate Change and a study published in the *Nature Climate Change* journal sort annual global greenhouse-gas emissions thusly:



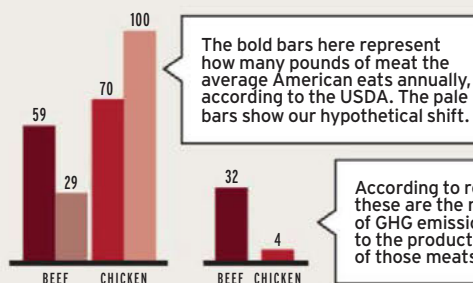
All greenhouse-gas emissions, including methane, are normalized to carbon-dioxide equivalents, or CO<sub>2</sub>e.

of pork and chicken. Not only is beef gassier than pork, says Tim Benton, a professor at the University of Leeds in England, it can be as bad for the environment as your Toyota.

"Everything we consume has a carbon footprint," he says, "but we've fixated on cars and fueling them." All told, one pound of beef blows GHG equivalent to 32 pounds of carbon into the atmosphere. Including emissions from fuel production and transport, a four-cylinder Camry exhales less than a pound of carbon per mile, according to the EPA. So as long as you drive less than 18 miles round trip to lunch, your half-pound burger accounts for more

## PARKING LOTS

The nonprofit Environmental Working Group claims that if Americans replaced all the beef in our diets with chicken, the GHG savings would be equivalent to parking about 26 million cars. But what if we just replace half?



Emissions from beef and chicken in current diet: 8672 pounds GHG.

Emissions from beef and chicken in modified diet: 5312 pounds GHG.

**REPLACING HALF THE BEEF IN A FOUR-PERSON FAMILY'S DIET WITH CHICKEN WOULD CUT THEIR GHG TOTAL BY MORE THAN 3300 POUNDS PER YEAR—ABOUT THE SAME SAVINGS AS DAD TRADING IN THE CORVETTE FOR A CAMRY.**

2014 Chevrolet Corvette 6.2-liter:  
518 grams of CO<sub>2</sub>e per mile, 13,700 pounds in 12,000 miles of driving.

2014 Toyota Camry 2.5-liter:  
388 grams of CO<sub>2</sub>e per mile, 10,265 pounds in 12,000 miles of driving.





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Driving is serious business and requires your full attention. Obey all traffic laws, always drive safely and wear your seat belt. Damage resulting from racing, competitive driving, track and/or airstrip use not covered by warranty. See your New Vehicle Limited Warranty and Owner's Manual for proper vehicle operation and complete warranty details. Always wear your seat belt, and please don't drink and drive. ©2014 Nissan North America, Inc.

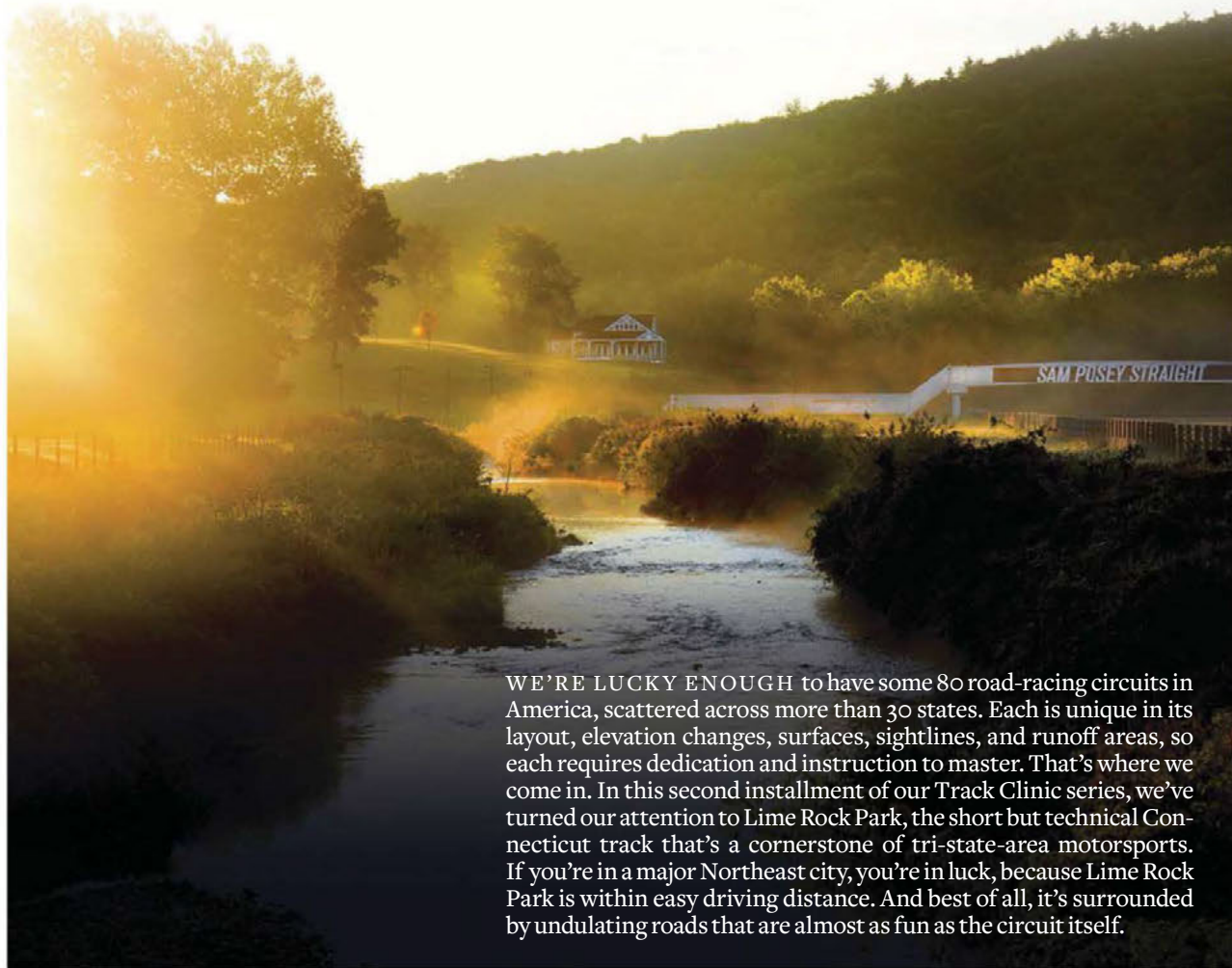
# Rock Steady

LIME ROCK MAY HAVE ONLY SEVEN  
TURNS, BUT THIS CONNECTICUT  
MAINSTAY IS TRICKIER THAN IT LOOKS.

by Csaba Csere



# *track clinic*



WE'RE LUCKY ENOUGH to have some 80 road-racing circuits in America, scattered across more than 30 states. Each is unique in its layout, elevation changes, surfaces, sightlines, and runoff areas, so each requires dedication and instruction to master. That's where we come in. In this second installment of our Track Clinic series, we've turned our attention to Lime Rock Park, the short but technical Connecticut track that's a cornerstone of tri-state-area motorsports. If you're in a major Northeast city, you're in luck, because Lime Rock Park is within easy driving distance. And best of all, it's surrounded by undulating roads that are almost as fun as the circuit itself.

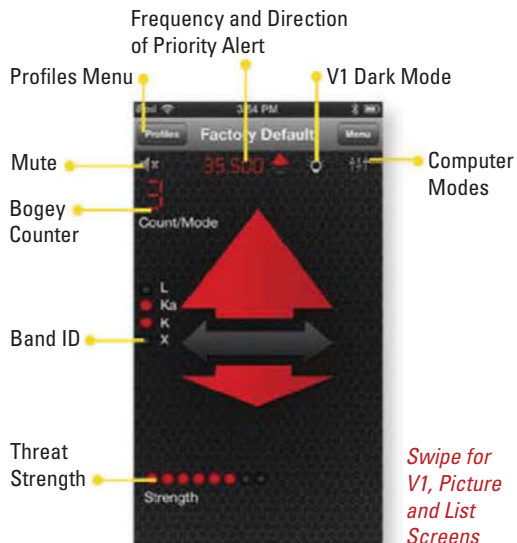


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**List Screen**—the Threat List shows all signals in range by numerical frequency, each with an arrow showing Direction.

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Mike Valentine  
Radar Fanatic



AN EXTENSION THAT CLIMBED THE HILLSIDE WAS TO BE PART OF THE TRACK, BUT THE BUILDERS RAN OUT OF MONEY.



## HISTORY

Lime Rock is the third-oldest continuously operating road-racing track in the country, after Road America and Watkins Glen. It was built in a cornfield in 1955 at the behest of Briggs Cunningham and other SCCA officials, and the first race there was in 1957.

Rather quick and with only seven corners, Lime Rock feels even shorter than its 1.5 miles. The Connecticut squires have long prohibited racing on Sundays, but Lime Rock saw a lot of headline racing in the 1960s, '70s, and '80s. It was the main East Coast track for the classic Trans-Am and Can-Am series and hosted IMSA races during the heyday of the ultrafast GTP cars. During the '70s it was also *Car and Driver's* home track and the venue for our five Reader Challenges, which pitted editors against readers in various SCCA showroom-stock racers [see "Lessons in Humility"].

The track lay largely unchanged through 1989, when the "John Morton" chicane was installed at the top of the Uphill corner. Morton barely survived a fiery crash after his Nissan GTP car got airborne here while prepping for the 1988 race. The track was repaved in 2008 and two alternate corner configurations were added, including one to replace the Morton chicane. But the original circuit remains in use for most amateur events.

Skip Barber, founder of the excellent driver's school, has owned the track since 1984, and the facility hosts a full schedule of events ranging from schools hosted by Skip Barber Racing and the Porsche Club of America to modern-day IMSA races. Skip's instruction book for Lime Rock helped inform this story.



TURNS

1&amp;2

BIG BEND

Probably the most famous corner at the track, this is actually two tightly linked right-handers. The first one is at the terminus of the long front straight and is deceptively fast. It's a key place to practice late braking, and you should decelerate all the way until the apex.



Then, add a bit of throttle and hold the car against the curbing as much as possible. Don't track out all the way, because Turn Two, also called the Hook, is best entered from the middle of the track. Just breathe the engine a bit on entry and drive a late apex, as this turn leads to the Lefthander.

TURN

4

RIGHTHANDER

This corner is a fast bend leading onto the No-Name Straight, so a good line and a hard exit are critical. A proper execution of Lefthander sets you up for an easy entry into Four from the left edge of the track. Get all the way into the apex, as the track's camber will provide additional grip. Unlock the wheel and add power as soon as you can for a blast up the straight.



TURN

3

LEFTHANDER

The only left turn on the circuit, it bends well over 100 degrees and also requires a late apex.

Fortunately, you don't need to be all the way on the right for the entry. Drag the brakes as you bend into the turn, using the release of the brakes to rotate the car toward the apex. Stay close to the left side of the track on exit to set up for the critical Turn Four that follows.



**SAM POSEY STRAIGHT IS A BIT LESS THAN 2200 FEET LONG.**

## LAP MAP

THE TRACK LENGTH WAS HISTORICALLY QUOTED AS 1.53 MILES, MEASURED WITH THAT PINNACLE OF SCIENTIFIC PRECISION, A CHEVY STATION WAGON. EVER SINCE THE TRACK WAS REPAVED IN 2008, LRP HAS BEEN TRYING TO GET PEOPLE TO JUST SAY 1.5 MILES. THE DUDE ABIDES.

TURN

7

DOWNHILL

This is the fastest turn on the circuit. The entrance is downhill, but just past the turn-in the hill bottoms out. Take advantage of the extra grip afforded by the compression and tighten your steering momentarily or you'll run out of track at the exit. And you can't afford to lift there, as Downhill exits onto the front straight—the longest on the track—and any loss of speed will plague you for the next 2000-plus feet.





## WHAT TO DRIVE



◀ **JAGUAR F-TYPE:** Finally, Jag builds a successor to the C-, D-, and E-types that raced here. Don't turn off the electronic aids until you've mastered the line.



▲ **PORSCHE BOXSTER:** With nearly two dozen Porsche Club of America track days last year, it's practically Lime Rock's mascot.

▶ **SCION FR-S:** It's a tin-top throwback to the earliest cars to race at Lime Rock. And, like the track, it proves you don't need much power to have fun.



◀ **BMW M4:** Ms of any vintage come into their own on the track, where you can fully exploit their stiff suspensions and powerful engines.

## FASTEST LAP

**43.11 SECONDS**  
P. J. JONES  
TOYOTA MK III GTP  
MAY 1993

## TURN 5 UPHILL

finish turning before the crest of the hill. You want your steering wheel to be straight when the tires unload. There's a guardrail close by on the outside, ready to bite you if you screw it up.

This turn has a pronounced rise and peak, so point the car in early and the compression just after the apex will provide extra grip to keep you on line. Not much braking is required here, but the key is to



## TURN 6 WEST BEND

Brake just slightly in a straight line and turn with a bit of throttle. Take a classic line through this fast corner and kiss the inside curbing. But be careful because the curbing radius doesn't match the corner's. The camber goes negative at the track-out point, so last-minute steering inputs won't keep the car on track.



**SURVIVE FIVE? TAKE ADVANTAGE OF THIS OPPORTUNITY TO BREATHE. BUT DON'T BLINK.**

## WHERE TO STAY

CAR AND DRIVER APPROVED



**\$-A MEADOW HOUSE, LAKEVILLE.**

Across the street from the track and cheap. But it's a B&B with only six rooms, so book early.

**\$\$-MOUNTAIN VIEW MOTEL, GREAT BARRINGTON, MASSACHUSETTS.** Although it's across a state line, it's only 24 miles away and \$100 or so a night. And it's not a chain.

**\$\$\$-SHARON COUNTRY INN, SHARON.** Looks like a motel, but the rooms are very nice and it's within eight miles of the track. There's a covered bridge nearby.

035

## WHILE YOU'RE STILL YOUNG

## LESSONS IN HUMILITY

By September 1972, *Car and Driver* was so deep into SCCA Showroom Stock racing that it seemed like a good idea to challenge the readers to a race. Technical editor Don Sherman recast a long-term, 30,000-mile Ford Pinto as "Project ReaderBeater" and threw down the gauntlet. Seventy-seven cars showed up for the first race, which we covered in the January 1973 issue. People who didn't want to compete got free beer. Sherman and executive editor Patrick Bedard both crashed, but associate editor Jim Williams held on for a sixth-place finish. Bedard won Reader Challenges two and three, the only staffer to triumph in any of the events. After featuring the Challenge in five consecutive January issues, we called it quits. Renault picked up the October date for its LeCar Challenge, and we featured an airborne Ford Bronco on our January 1978 cover.



# by John Phillips

■■■ A GREY BUSINESS WITH COLOR.



**"There is no black and white, this is a grey business."**

So says Rick Mears on page 427 of the 546-page book *Making It Faster: Tales from the Endless Search for Speed* by Dan Binks and Norm DeWitt. I mention the page number because I've developed a habit of allowing a book 100 pages to grab my

attention. If by then it hasn't, I toss it. That is, I throw it across the room. I recently hurled *Wolf: The Lives of Jack London*, a biography, a good 15 feet—and, really, how could you make Jack London's life boring? And eons ago, I completed an NFL-worthy Hail Mary of James Clavell's 1376-page *Noble House*, which arrowed into a wall and awakened the tenant next door, who later told me she thought I was engaged in some sort of wrestling match, which, come to think of it, I was.

Anyway, *Making It Faster* is not about Rick Mears but mostly about peripatetic Dan Binks, 51, currently the crew chief for Pratt & Miller's oft-unbeatable yellow endurance Corvettes. The book might have been called *Dan Binks Thinks*, because the man has—through sheer foresight, will, and several hundred crescent wrenches—helped deliver trophies to the likes of Jack Roush, John Paul Jr., Tommy Kendall, Paul Newman, Mark Martin, Robby Gordon, Greg Biffle, and my boyhood friend Bill Adam, who drove one of Binks's GTP March-Buicks fitted with a V-6 that had been turbocharged to Level 12 on the official Vesuvius Scale. Bill told me, "I became convinced that the engine would explode while idling through shag carpeting."

The book would have benefited from a professional copy editor and an index, but it does adequately skim the surface of four decades of race-car pioneering. Thomas Edison once said: "Results! Why, I have gotten a lot of results. I know several thousand things that don't work." Binks knows 90,000 things that don't work, including an outlaw fuel tank he fashioned for a Roush Trans-Am Mustang. He had scooped out portions of the tank's foam insert to create hidden cups and trays, gaining a bonus three gallons. "My problem," he recalls, "was the first time they filled it up in tech, it held 35 gal-



► **Tech inspectors may hate Dan Binks, but no one else does.**

lons; the second time, 32 gallons . . . so I knew this wasn't going to be good . . . They had it in their hand and couldn't figure it out . . . I was scared shitless." The Mustang eventually sat disqualified and shamed at Elkhart Lake. Binks apologized.

He recounts how Rick Mears could sense differences of one-hundredth of an inch of tire stagger and could alter the stagger by himself, midrace. "If the car had understeer," Mears said, "I'd run the left front down and hook it onto the apron,

which would really build up the pressure in the right rear . . . so the air would expand and the tire would grow." And he recalls Mears's reluctance to rely on aero grip: "Are geese considered to be a highly intelligent bird?" he asked. "Well, they know better than to fly right behind each other . . . because of the turbulence, the dirty air."

Binks recounts how Neil Oatley, Ayrton Senna's F1 race engineer, acquired a nickname. "After everyone went home at night, [Neil] would go around and look at everyone's designs and write Post-it Notes. So, the design team would arrive in the morning and see what the 'Design Fairy' had left."

Then there's racing engineer Gordon Kimball, who said of his era working with Enzo Ferrari: "The old man was really only interested in the engine. The rest of [the car] was only something that was carrying the engine."

Binks includes a recollection from race-car designer Trevor Harris, who took an investigative ride with a frustrated Geoff Brabham, then test-driving the aero mess that was the 1990 IMSA GTP Nissan: "I got in the car and there was no seatbelt for me, hanging on for dear life. When I was in it, Geoff was driving it at maximum speed . . . Going down the hill [at Elkhart Lake], it got to the point that the vertical shaking was so bad I could not see . . . it shook my glasses off."

Binks obsessively collects evidence, beginning with a Mazda RX-7 he crewed for Tommy Kendall. "There were so many levers [one of which illegally closed off the radiator] and gauges," Kendall recalled, "you couldn't tell if it was brake bias or sway bars or what . . . at last count, we had 17 gauges, one was on the floor of the passenger seat." Binks insisted that Kendall read the gauges at the end of the longest straightaway. "I told Binks that I could get them only one every lap," recalled Kendall.

Today's factory-backed Corvettes tell even taller tales. "This thing is a science project," Binks says, "there are wires going to everything . . . I think there are about 200 telemetry points." He then notes with pride that his latest wiring harness is 10 pounds lighter.

Ultimately, how could anyone not enjoy a book that quotes men named Ammar Bazzaz and Sander Donkers? At my house, *Making It Faster* thus gathered no frequent-flier miles. ■



# THE NEW THINKING

## ENTHUSIASTS TAKE A CLOSER LOOK AT CHEVROLET VERSUS THE COMPETITION

### OUR ENTHUSIAST

**PETER HA**  
BROOKLYN, NY



### TRUE STORY

Peter's co-pilot is a French Bulldog named Sadie. She can't read a map, but she's great at conversation.

Earlier this year we invited four Car and Driver readers to take a closer look at the Chevrolet lineup, turning enthusiasts like you into experts. Paired up with the Chevy Traverse, Peter Ha experienced the performance, design and technology that make the Chevrolet worth considering—whether it's your own vehicle or for the people who ask you for car-buying advice.

### CHALLENGE

## OPEN IT AND LOAD IT

We devised a hands-on challenge to help our readers understand the practical side of the class-leading 116 cubic feet<sup>†</sup> of cargo space in the Traverse. Faced with an assortment of puzzle pieces that bear a striking resemblance to a famous video game, Peter and the rest of the crew packed as many boxes as possible into the Traverse and then tried the same feat in three other midsize SUVs. With Peter's organizational skills leading the way, the

group quickly got the hang of arranging the boxes for maximum storage. And when it was all done, the highest score went to the Traverse, proving that its big cargo number makes a real difference.



PETER'S TECH BACKGROUND MEANS HE'S ALWAYS LOOKING FOR A CHARGE. "IT'S IMPORTANT THAT ANY VEHICLE I'M LOOKING AT INCLUDES A BEVY OF USB AND POWER PORT OPTIONS." THE TRAVERSE HAS THAT COVERED AND MORE.

● 3 USB CHARGING PORTS\*

● 3 12-VOLT DC POWER OUTLETS

● 12 CUP HOLDERS

● 7 AVAILABLE AIR BAGS  
(INCLUDING THE WORLD'S FIRST FRONT-CENTER AIR BAG)

## TRAVERSE

Not everyone is going to use the maximum cargo space of the Traverse all the time. That's why it has the flexibility of up to eight seats, with versatile folding second and third rows. Plus, a 1600-pound payload\*\* and 5200-pound towing capacity\*\*\* means you don't have to leave anything behind.



BROUGHT TO YOU BY



the  
**NEWS**

Keep watching for news on the 2015 Chevrolet lineup, including more special reports, enthusiast insights, and driving adventures.

<sup>†</sup>Cargo and load capacity limited by weight distribution. \*Not compatible with all devices. \*\*For comparison purposes only. See the Owner's Manual and the label on the vehicle door jamb for the carrying capacity of a specific vehicle. \*\*\*Before you buy a vehicle or use it for trailering, carefully review the trailering section of the Owner's Manual. The weight of passengers, cargo and options or accessories may reduce the amount you can tow.

5-STAR OVERALL VEHICLE SCORE FOR SAFETY.<sup>1</sup>

# TRAVERSE: A NEW STANDARD OF SAFETY.



NHTSA 5-Star Safety  
**HIGHEST POSSIBLE  
SAFETY SCORE**

The 2015 Traverse has received the highest possible award from the National Highway Traffic Safety Administration (NHTSA): a 5-Star Overall Vehicle Score for safety.<sup>1</sup> NHTSA independently tests for front and side impacts plus rollover resistance and then rates vehicles on a scale from one to five stars – the more stars, the safer the vehicle.



*Front Center Air Bag Innovation*  
**SURROUNDED BY SAFETY**

Traverse offers six standard air bags and an available industry-first front center air bag.<sup>2</sup> Built into the right side of the driver seat, this innovative front center air bag deploys in milliseconds to provide restraint and cushioning for both the driver and the front passenger in the event of a side-impact crash and added protection in the event of a rollover. In Traverse, you're surrounded by safety and the peace of mind it brings.



*StabiliTrak,  
Side Blind Zone Alert, OnStar*  
**BE PREPARED ON THE ROAD**

StabiliTrak® Electronic Stability Control selectively applies the brakes to keep you steady in the corners, while the standard rear vision camera detects stationary objects behind you. Side Blind Zone Alert<sup>3</sup> warns you when it detects a vehicle in your blind spot and again if you attempt to change lanes. And available OnStar® Automatic Crash Response<sup>4</sup> connects you to an Advisor who can get emergency help after a collision, even if you can't respond.



*The 2015 Traverse is refined and stylish inside and out and features the latest technology – innovative air bag design, stability control and blind zone alerts – surrounding you and your passengers with safety from every angle.*

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**CHEVROLET** 

<sup>1</sup> Government 5-Star Safety Ratings are part of the U.S. Department of Transportation's New Car Assessment Program ([www.SaferCar.gov](http://www.SaferCar.gov)). <sup>2</sup> Always use safety belts and child restraints. Children are safer when properly secured in a rear seat in the appropriate child restraint. See the Owner's Manual for more information. Air bag inflation can cause severe injury or death to anyone too close to the air bag when it deploys. Be sure every occupant is properly restrained. <sup>3</sup> Before making a lane change, always check the Side Blind Zone Alert display, check the side and inside rearview mirrors, look over your shoulder for vehicles and hazards, and start the turn signal. <sup>4</sup> Visit [onstar.com](http://onstar.com) for coverage map, details and system limitations. OnStar acts as a link to existing emergency service providers. Not all vehicles may transmit all crash data.



# by Aaron Robinson

WE PUT MEN ON THE MOON, THEN MADE RACING JUST LIKE IT.



At the 24 Hours of Le Mans this year, Porsche PR escorted me to the breakfast table of Hurley Haywood, who won his first Le Mans back in 1977 in a Porsche 936. Having just come back from Porsche's pits, where a roomful of engineers managed the remaining 919 hybrid still in the hunt, Haywood said with a snort, "It's like Mission

Control over there." Racing's lovable Dr. Grumpy continued, saying that he's awful glad that he raced when he did, before radios and telemetry and voices telling you what to do. In other words, back when there was just one brain in the cockpit. "You were alone in the car," he said. "All those dials and buttons on the steering wheel nowadays and the room full of engineers telling you to turn this or push that. I wouldn't like it."

The one time I raced with voices in my head was back in 2007, when I was driving our project Nissan 350Z Grand-Am Koni Challenge car. This was big-league racing, in which the cars were expensive, radio-equipped, and fast. Well, our Z was expensive and had a radio, so credit for two out of three. One voice on it was the crew chief, who didn't say much, while the other was a track spotter, who said a lot. The spotter's relaxed, assuring voice came through about every 24 seconds with helpful cautions, such as "Mustang coming up on the right" and "Porsche going up the inside, BMW on the outside. You're doing great!" Unlike Haywood, though, I actually liked the voices, being something of a talker in a race car myself. I would say to the radio, "Hey, next lap I'm going to try downshifting before that apex instead of after," and a voice would say, "Sounds like a plan!"

Instructions from the team manager go back to the chalk and signboard, but more than ever, racing at the pinnacle is a group endeavor, a fact accentuated by the three leading teams at this year's 24 Hours. For Audi, Porsche, and Toyota, the drivers didn't just keep an ugly car between the lines; they served as the in-car representatives of the hordes of support staff in the pits, which, with better telemetry and capability for on-the-spot analysis, are exerting more and more control over the decision making. As the cars become even more laden with black boxes to run their hybrid powertrains and energy-recovery systems, Le Mans drivers are looking less like gladiators in chariots and more like astronauts in capsules.

Over in Formula 1, instantaneous lap analysis had led to continuous driver coaching, as in this midrace missive to



► Ground control to racer Tom, slow down and turn C-map on.

Nico Rosberg at Monza this year: "Earlier apex in Turn 11, Parabolica. Try and open the steering on exit for scrubbing." New fuel-consumption and tire rules have only added to the litany of instructions from the pits, and on-air sniping had become the hilarious sidebar to the 2014 F1 season. At Hockenheim in July, a confused Sebastian Vettel retorted to his race engineer: "What do you want me to do? Do you want me to pass him or save fuel?" When Lewis Hamilton's pit asked him to engage the "menu magic" for his pit stop, Hamilton radioed

back, "I have never even heard of that switch." Race engineer Peter Bonnington told him not to worry about it.

Leave it to the FIA to address problems created by too many rules with another rule. On-air chatter has made a mockery of what is already perhaps the most flagrantly ignored rule in the FIA's Sporting Regulations. Article 20.1 states that "the driver must drive the car alone and unaided." So this September, the organization banned radio messages that contain "any information that is related to the performance of the car or driver." The ruling specifies 18 types of prohibited messages, such as directives to save fuel and a variety of driver instructions. The last one bans "any message that appears to be coded." See? All fixed. The only thing that seems certain is that teams will find a way around.

When he ditched the mission plan and skimmed over the moon's surface looking for a rock-free landing zone, Neil Armstrong proved that any endeavor involving fast machines still relies on a steady hand at the controls. No amount of pit advice can help a driver get through the first corner of an F1 race, or navigate the Mulsanne during a rainy night amidst weaving Ferraris driven by rich plonkers. That's down to skill, experience, and chance, the latter of which engineers hate.

The space program operated on the principle of a tightly choreographed, whole-team effort, meaning that outcomes took priority over theatrics and individual egos. Astronauts were told when to eat, when to sleep, when to burn, when to turn, and, ultimately, where to walk. There was simply too much at stake to do otherwise.

There's plenty at stake in top-tier racing, too. But racing is a sport, meaning it's dependent for its commercial success on exactly the kind of drama that the back-room slaves to avoid. Mistakes, mechanical failures, and the clashing of overheated egos are the grist that the racing mill needs to sustain itself. NASA rightly scripted its show to exhaustion, which ultimately made moonshots seem routine. And boring. When racing becomes routine, when its intangibles are scripted out, it's dead. ■

# by Ezra Dyer

👤👤👤 A CAR IN A BARN IS MONEY IN THE BANK.



**Ladies and gentlemen, welcome** to the 34th annual Cruste & Spackle Collector Car Auction and Buffet here in sunny Palm Ocean Desert. As your auctioneer, I look forward to stoking the excitement as more than 4000 cars cross the block over the next 72 hours. **At the end of this thing you can call me Cuddles the Miniature Pony,** because

I'll be a little hoarse. That's some auction humor for you. We auctioneers like to make jokes to distract ourselves from wondering how you mouth-breathers can afford to buy a clean pair of jorts, never mind a Freightliner full of E-types.

But that's a question for another day. The question right now is: Are you ready for a barn car? And the answer better be yes, or you're gonna miss out on the best worst car in years.

For those of you unfamiliar with the concept of a barn car, allow me to educate you on this hot new genre of collector vehicles. Just a few years back, you'd go to an auction like this and look for a car that was clean, shiny, and freshly tuned up. Like a total idiot! Originality, we now know, is more valuable than superficial considerations like beauty or safety or not smelling like the catacombs of San Callisto.

And nothing's more original than a car you find in a barn. As you may have heard, a rusted-out Ferrari Dino barn car recently sold for \$221,000. And that, my friends, is just the tip of the gorgeously patina'd iceberg.

Allow me to set the scene. Dust motes float romantically through the fading evening light. A mare whinnies in the distance. A soft breeze wafts in, redolent of lavender and summer rain. And there, in the center of it all, is the hottest commodity at this auction: a 1985 Maserati Biturbo. Here she comes! Just a moment while they douse that fire.

According to our partial documentation, which is supported by both intuition and oral folklore, this car was parked in January 1986 for what was supposed to be an easy oil change. But the owner took a break to check his Wang—he was an early computer enthusiast—and when he returned a small fire had broken out near the left exhaust manifold, and also the right exhaust manifold, and also rats had

**READY FOR A BARN CAR? THE ANSWER BETTER BE YES, OR YOU'RE GONNA MISS OUT ON THE BEST WORST CAR IN YEARS.**

eaten the plug wires. There was minor flood damage from the car's own leaking fluids, which pooled in the immediate area thanks to a family of beavers that built a dam out of brake asbestos. The tires were flat, the battery was dead, and the tape deck jammed on Rod Stewart's "Hot Legs." That all of this transpired after just an hour at rest is a testament to how much these cars love to be driven.

The owner, vowing never again to let Joe Walsh lyrics influence a major purchase, decided to sell the Biturbo rather

than complete the oil change, which in any case required seven quarts of a proprietary formulation known as 10W Never You Mind. But the next day he was simultaneously arrested by the SEC, the DEA, and the IRS for evading taxes on his cocaine Ponzi scheme.

This was a common situation for Maserati owners in the '80s and shouldn't be considered a demerit to the vehicle. After his arrest, the car became mired in red tape when it was designated a federal Superfund site.

Speaking of the vehicle's history, I draw your attention to the skeleton in the driver's seat. That's the owner. And not just any owner—the original owner! According to his family, he never had a cavity or even used moisturizer, so he can be considered barn-fresh himself. Over there in the passenger seat is his wife. Excuse me, dear. Sit still! Back in the car, okay? She's fine, everyone.

Get ready, because there's one more thing that sets this car apart from any other incinerated, flooded, rusty, dirty, skeleton-inhabited gem of a machine. Bring in the flatbed... and here's the barn itself! The winning bidder will take home both the car and the termite-infested wooden structure in which it was found, so this Maserati can continue to accrue valuable dust and rodent droppings in the proper context.

Now, we realize that the future owner might sometimes want to go out there and gaze longingly at this fine machine, but scientists postulate that the observation effect—where the act of observation alters that which is observed—means that looking at it will hurt the car's originality. And we're legally required to inform you that driving this vehicle would require a commercial hazardous-waste endorsement on your license, on account of all the hantavirus and Legionnaires' disease.

I'll begin bidding at \$250,000.

Do I have a bid? Yes, you, sir, with the ponytail and the satin Members Only jacket. Do I hear 260? Over there, the fellow who looks like Steve Buscemi after a bad night! Up is down left is right bad cars are good. Do I hear 270? I have 270, to the man holding the PalmPilot and wearing pleated acid-wash Jordache dungarees.

And don't worry, if you miss out on this one, up next we have the famous Manure Car of Louisville! Ladies and gentlemen, get those paddles ready, because the only thing that's clean is the title. 🍷



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# Three Great American Turnarounds Meet in a Fourth.

*by Jared Gall / photographs by Greg Pajo*





# PITTSBURGH SQUEALERS

**Dodge Challenger R/T Scat Pack**

PRICE &gt; \$39,490 • POWER &gt; 485 hp • TORQUE &gt; 475 lb-ft • WEIGHT &gt; 4226 lb • C/D OBSERVED MPG &gt; 16



IT'S HARD TO RECONCILE THE 2015 FORD MUSTANG and its competitors with the city in which muscle cars were born. While decaying Detroit slogs through bankruptcy proceedings, still shrugging off the millstones of its past and working hard to get up and running again, the Ford is fully transformed into something sleek and modern. Meanwhile, its two direct and highly successful foes have recently been freshened with changes of their own.

The new sixth-generation Mustang finally gets an independent rear suspension, a mainstream-Mustang first and the equivalent of Detroit hosting the Olympics. That's matched by a redesigned front suspension supported by a lighter, stiffer subframe. Nestled in that subframe, the 5.0-liter V-8 straps on a new intake manifold, heads, and valvetrain, raising output from last year's 420 horsepower and 390 pound-feet to 435 and 400, respectively.

The car's basic profile is familiar, but at anything closer than field-artillery range, the stretched proportions and tauter skin are unmistakable. The rear haunches sit wider than before and are crowned with sharper creases; the view from the front is all fangs and sinew; and the body sides are sucked in, giving the impression of a narrower car though it's actually 1.5 inches wider.

Pricing for the V-8 GT starts at \$32,925, but with a list of options that includes the Performance package's suspension upgrades and adaptive cruise control, ours climbed to a somewhat Germanic \$45,885.



**Ford Mustang GT**

PRICE &gt; \$45,885 • POWER &gt; 435 hp • TORQUE &gt; 400 lb-ft • WEIGHT &gt; 3810 lb • C/D OBSERVED MPG &gt; 17

**Chevrolet Camaro SS 1LE**

PRICE &gt; \$41,880 • POWER &gt; 426 hp • TORQUE &gt; 420 lb-ft • WEIGHT &gt; 3884 lb • C/D OBSERVED MPG &gt; 17



It's nowhere near as thorough a rework, but the 2015 Dodge Challenger greets the redesigned Mustang with some cosmetic surgery of its own, including a new nose and rear fascia. Dodge continues to vigorously plunder its past with the new R/T Scat Pack, which takes its name from a 1968-71 Dodge marketing program and takes its engine from the modern-day SRT. The 6.4-liter's output creeps up to 485 horsepower and 475 pound-feet of torque, embarrassing the outputs of the Mustang and Camaro. The Scat Pack also upgrades the brakes and includes the Challenger's

new Super Track Pak, which lowers the suspension a half-inch and fits Bilstein shocks and larger anti-roll bars. Think of the Scat Pack as an SRT without the badges and for \$7500 less. At \$39,490, our base Scat Pack was both the cheapest and the most powerful car in this test.

A whole year has passed since the Chevrolet Camaro got its new head- and tail-lights, but it's not yet wearing grooves in the porch with its rocking chair. The 426-hp SS 1LE is more or less a ZL1 without the supercharger. It pilfers a bunch of suspension parts, a strut-tower brace, close-ratio

transmission with a cooler, and a high-pressure fuel system from the ZL1. With Recaros lifted from the Z/28, a boisterous dual-mode exhaust, and a few other extras, the Camaro tallies at \$41,880.

If not Detroit, then where do cars like these belong? To test their high-tension suspensions, we set a course four and a half hours southeast to Pittsburgh and the Allegheny foothills. Just as many of Detroit's assembly lines have slowed and stopped, the fires died one by one in Steel City's mills, too. But today, Pittsburgh thrives as an Appalachian Silicon Valley,



drawing the likes of Apple and Google and consistently ranking among the best cities in America for just about anything—starting a business, raising a family, or drunkenly brawling at football tailgates. And had Henry Ford settled in these hills instead of the flatlands of Detroit, an American car that handles might not be such an anomaly.

### 3. Dodge Challenger R/T Scat Pack

The Challenger R/T is the only car in its class weighing more than two tons and, until now, was the only one with less than

#### DODGE CHALLENGER R/T SCAT PACK

- An SRT engine and soundtrack without the SRT premium.
- Looks and feels like an original Challenger that was stung by bees.
- More power is good, but less mass would be better.

400 horsepower. Fitting the SRT engine into the more affordable Scat Pack, then, was an inspired move. From the ornery cough at startup to the active exhaust's withering roar under wide-open throttle, the big Hemi defines the Scat Pack. With 50 more horsepower than the Mustang and 55 more pound-feet of torque than the Camaro, the Challenger posted a better quarter-mile run than either enemy, both of which are lighter.

But the engine isn't even the Scat Pack's biggest surprise. On our Pittsburgh loop's wet blind crests—yes, it rained—and sharply decreasing radii, the Super Track Pak's upgraded suspension managed the Challenger's 4226 pounds far better than expected. And its stability control finally gets a full-off mode, although a brake override cuts the throttle if you try to roll a burnout for too long. (Hey, you know that this stuff matters when the Mustang offers a factory front-brake line-lock mode for mega burnouts.)

It might handle better than expected, but the Scat still doesn't stick as well as the other two. Its 0.91 g on the skidpad is a full tenth behind the Camaro's performance, and it finished last in the slalom as well.

↓ It's big and fat, but with the SRT engine and decent body control, this Challenger is quicker and handier than you probably think.








Dodge's engineers have done an impressive job of taming the Challenger's bulk, but they would do better if they could simply reduce it. It's the longest, widest, tallest, and heaviest car here. If we wanted to make a bad pony-car joke, we might call the Challenger a Clydesdale. But that would be inaccurate; it's more like driving Hillsdale, Michigan (population: 8305). It feels about 1.5 lanes wide. Out on rural Pennsylvania's Midget Camp and Hypocrite Creek roads, we pined for one of our other, smaller cars.

At least there's plenty of crush space around all occupants should you meet anything larger than a three-wheeled tuk-tuk head-on. The Dodge is huge inside, with the most spacious front seat and the test's only real, habitable back seat. We know from experience that you can fit six 7.5x17-inch wheels in the trunk—or, if you'd like to stick with the Scat Pack theme, 16 cubic feet of fertilizer. And when it came time to aim our convoy along Ohio's flat and featureless I-80 for home, nobody complained about the Challenger's comparatively cushy ride. But neither was anyone quite as impressed with the newfound control of that big body after sampling either of the two other cars here.



			
VEHICLE	CHEVROLET CAMARO SS 1LE	DODGE CHALLENGER R/T SCAT PACK	FORD MUSTANG GT
BASE PRICE	\$34,500	\$39,490	\$32,925
<b>PRICE AS TESTED</b>	<b>\$41,880</b>	<b>\$39,490</b>	<b>\$45,885</b>
DIMENSIONS			
LENGTH	190.6 inches	197.9 inches	188.3 inches
WIDTH	75.5 inches	75.7 inches	75.4 inches
HEIGHT	54.2 inches	57.5 inches	54.4 inches
WHEELBASE	112.3 inches	116.2 inches	107.1 inches
FRONT TRACK	63.7 inches	63.4 inches	62.3 inches
REAR TRACK	63.7 inches	63.8 inches	64.9 inches
INTERIOR VOLUME	<b>F: 52 cubic feet</b> <b>R: 31 cubic feet</b>	<b>F: 56 cubic feet</b> <b>R: 38 cubic feet</b>	<b>F: 55 cubic feet</b> <b>R: 32 cubic feet</b>
TRUNK	11 cubic feet	<b>16 cubic feet</b>	14 cubic feet
POWERTRAIN			
ENGINE	pushrod 16-valve V-8 376 cu in (6162 cc)	pushrod 16-valve V-8 391 cu in (6410 cc)	DOHC 32-valve V-8 302 cu in (4951 cc)
<b>POWER HP @ RPM</b>	<b>426 @ 5900</b>	<b>485 @ 6000</b>	<b>435 @ 6500</b>
<b>TORQUE LB-FT @ RPM</b>	<b>420 @ 4600</b>	<b>475 @ 4200</b>	<b>400 @ 4250</b>
REDLINE/FUEL CUTOFF	6200/6600 rpm	6000/6400 rpm	7000/7000 rpm
LB PER HP	9.1	<b>8.7</b>	8.8
DRIVE LINE			
TRANSMISSION	6-speed manual rear	6-speed manual rear	6-speed manual rear
DRIVEN WHEELS			
GEAR RATIO:1/MPH PER 1000 RPM/ MAX MPH	<b>1</b> 2.66/77/51 <b>2</b> 1.78/11.5/76 <b>3</b> 1.30/15.8/104 <b>4</b> 1.00/20.8/137 <b>5</b> 0.74/28.4/156 <b>6</b> 0.50/41.1/144	<b>1</b> 2.97/7.2/46 <b>2</b> 2.10/10.3/66 <b>3</b> 1.46/14.7/94 <b>4</b> 1.00/21.4/137 <b>5</b> 0.74/28.9/176 <b>6</b> 0.50/43.1/155	<b>1</b> 3.66/6.0/42 <b>2</b> 2.43/8.9/62 <b>3</b> 1.69/12.7/89 <b>4</b> 1.32/16.3/114 <b>5</b> 1.00/21.3/149 <b>6</b> 0.65/34.2/164
AXLE RATIO:1	3.91	3.90	3.73
CHASSIS			
SUSPENSION	<b>F:</b> struts, coil springs, anti-roll bar <b>R:</b> multilink, coil springs, anti-roll bar	<b>F:</b> control arms, coil springs, anti-roll bar <b>R:</b> multilink, coil springs, anti-roll bar	<b>F:</b> struts, coil springs, anti-roll bar <b>R:</b> multilink, coil springs, anti-roll bar
BRAKES	<b>F:</b> 14.0-inch vented disc <b>R:</b> 14.4-inch vented disc	<b>F:</b> 14.2-inch vented, grooved disc <b>R:</b> 13.8-inch vented, grooved disc	<b>F:</b> 15.0-inch vented disc <b>R:</b> 13.0-inch vented disc
STABILITY CONTROL	fully defeatable, traction off, competition mode	fully defeatable, competition mode	fully defeatable, traction off, competition mode, launch control
TIRES	Goodyear Eagle F1 Supercar G-2 285/35ZR-20 (100Y)	Goodyear Eagle F1 Supercar 245/45ZR-20 99Y	Pirelli P Zero <b>F:</b> 255/40ZR-19 96Y <b>R:</b> 275/40ZR-19 101Y

#### C/D TEST RESULTS

<b>ACCELERATION</b>			
0-30 MPH	<b>1.9 sec</b>	<b>1.9 sec</b>	<b>1.9 sec</b>
<b>0-60 MPH</b>	<b>4.5 sec</b>	<b>4.4 sec</b>	<b>4.5 sec</b>
0-100 MPH	10.3 sec	<b>10.2 sec</b>	10.4 sec
0-150 MPH	30.2 sec	27.0 sec	<b>25.4 sec</b>
1/4-MILE @ MPH	<b>12.9 sec @ 111</b>	<b>12.9 sec @ 113</b>	13.0 sec @ 113
ROLLING START, 5-60 MPH	51 sec	<b>4.8 sec</b>	4.9 sec
TOP GEAR, 30-50 MPH	11.0 sec	11.5 sec	<b>9.6 sec</b>
TOP GEAR, 50-70 MPH	10.8 sec	11.3 sec	<b>9.0 sec</b>
<b>TOP SPEED</b>	<b>156 mph (gov ltd)</b>	<b>176 mph (drag ltd)</b>	<b>164 mph (gov ltd)</b>
<b>CHASSIS</b>			
BRAKING, 70-0 MPH	<b>145 feet</b>	151 feet	149 feet
<b>ROADHOLDING;</b>			
<b>300-FT-DIA SKIDPAD</b>	<b>1.01 g</b>	0.91 g	0.95 g
610-FT SLALOM	<b>44.2 mph</b>	42.0 mph	43.0 mph
<b>WEIGHT</b>			
CURB	3884 pounds	4226 pounds	<b>3810 pounds</b>
%FRONT/%REAR	52.6/47.4	55.1/44.9	53.8/46.2
CG HEIGHT	<b>19.0 inches</b>	20.5 inches	20.0 inches
<b>FUEL</b>			
TANK	<b>19.0 gallons</b>	18.5 gallons	16.0 gallons
RATING	91 octane	91 octane	93 octane
EPA CITY/HWY	<b>16/24 mpg</b>	14/23 mpg	<b>15/25 mpg</b>
<b>C/D 700-MILE TRIP</b>	<b>17 mpg</b>	16 mpg	<b>17 mpg</b>
<b>SOUND LEVEL</b>			
IDLE	52 dBA	55 dBA	<b>49 dBA</b>
FULL THROTTLE	86 dBA	85 dBA	<b>81 dBA</b>
70-MPH CRUISE	<b>72 dBA</b>	<b>72 dBA</b>	<b>72 dBA</b>



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**HAD HENRY FORD SETTLED IN  
THE HILLS AROUND PITTSBURGH INSTEAD  
OF THE FLATLANDS OF DETROIT, AN  
AMERICAN CAR THAT HANDLES MIGHT  
NOT BE SUCH AN ANOMALY.**



## 2. Chevrolet Camaro SS 1LE

Hand-me-downs lose their whiff of sadness when they come from someone you love. The Camaro ZL1 is one such someone, its greatest feat not being the 580-horsepower its supercharged V-8 produces, but the ingratiating way in which its chassis handles that output. That chassis lends the 1LE its toe links, rear shock mounts, and wheel bearings, while the anti-roll bars are modeled after those that tame the ZL1's power. The 1LE also gets the ZL1's front tires (Goodyear Eagle F1 Supercar G-2s measuring 285/35ZR-20) on all four corners.

The result is a car that feels as if it belongs on a racetrack and in a faster class than the Challenger and the Mustang. The steering is hefty and immediate and the unanimous favorite among our voters. So, too, was the neutral handling balance, a preference cemented at the test track, where the Camaro circled the skidpad at 1.01 g's. A decade ago, you'd be lucky to get performance like that out of a six-figure supercar. We can't say the same for the 145-foot stop from 70 mph, but only because you'd be lucky to get that out of a six-figure supercar today. Despite that fact, a touch of mush at the top of the pedal travel relegated the 1LE to second in the brake-pedal scoring. And we loved the faux-suede steering wheel, an easy grab for sweaty mitts.

The 2014 face lift also brought about a dual-mode exhaust system that isn't an option so much as a privilege. The unmistakable shade of Corvette in the pipes gives this 426-hp pillbox an exhaust note that is pure battle cry. Back that engine up with a tight gearbox and a linear clutch and you've got a powertrain to match the neck-straining chassis.

But after cycling through the cars, senior editor Tony Quiroga stepped out of the Camaro and proclaimed it a great track car—a meaningful distinction, as he called the Mustang a great road car (and the Challenger a great SUV). For all its heroics, the 1LE's stiff suspension beats up the occupants on bumpy drives. And while the



### CHEVROLET CAMARO SS 1LE

- ✦ The fundamental things of driving: going, turning, and stopping.
- ✦ Nobody seems to have thought about everyday usability or comfort.
- ✦ A great weapon for the track makes a punishing tool for the daily grind.

↑ Dynamically, the 1LE is great, with Porsche-like control and responses. Opposite: Later, Lee Greenwood flew overhead on a bald eagle.

Mustang brings an unprecedented level of interior polish to the class, the Camaro still plumbs the same old depths of penny pinching. It does have its upmarket touches—that steering wheel and the matching shifter for example—and the designers' ambitions are apparent. But they're executed in generation-old plastics on the lower dash, console, and elsewhere. It's a jarring pairing, like wearing a custom-tailored shirt with sweat pants. Stained sweat pants.









The Camaro 1LE is a spectacular car, a testimony to what a group of focused engineers can accomplish even inside a monolith like General Motors. But it's definitely single-purpose. The suspension trades comfort for capability to a degree that is hard to appreciate anywhere but on a track, and this interior would feel cramped and cheap at half of the 1LE's price. We expect the sixth-generation Camaro to bow next year and for it to be a tidier package. Turn the 1LE team loose on a smaller, lighter car and even the new Mustang will be feeling the heat.

### 1. Ford Mustang GT

It can take many miles to understand an average car's strengths, but in exceptional cars, virtues become apparent within the first few hundred yards. Even if you were to idle the new Mustang across a perfectly smooth surface—say, a showroom floor, an undertaking readers are advised to pursue—its specialness would show. It is



→ The Mustang GT's 5.0-liter V-8 is down more than a liter of displacement to the others, but performance doesn't suffer for it.

remarkable how tight this car feels. The slightest steering input results in an immediate reaction. A salesman's pen on the tile beneath a front tire would register as a minute twitch of the steering wheel. It's as if every bolt between the fire wall and the front hubs is torqued to the verge of snapping (minus the sense of imminent catastrophe). There is simply no slack here.

This example was further tightened via the Performance pack. It includes stiffer springs, bushings, and rear dampers. There's a thicker rear anti-roll bar, a front-





subframe K brace, and brakes from the outgoing GT500. Signals beamed from the tires reach your brain so clearly that you'd think the rear contact patches are your left and right buttocks. It's a sensation amplified by the long hood and how far back in the car the driver sits. Ford says that with this package, the GT will lap a racetrack even quicker than the gen-five Boss 302.

### FORD MUSTANG GT

- ⊕ Balance and bandwidth to spare, sheetmetal to covet.
- ⊖ Back-seat space is better measured in fluid ounces than cubic feet.
- ⊞ The original again sets the example the others must follow.

And, unlike the Camaro, the Mustang remains engaging but never abusive on public roads.

A great chassis demands an equivalent engine, and Ford's reworked 5.0 is it. It revs freely and pulls linearly, and its quick throttle makes slight output adjustments easy. We ranked it behind the Challenger's engine only because its muted vocals sound as though the mufflers are stuffed with cotton. That won't do in the first vehicle to offer a factory line lock. Drag racers have been adding these locks to their cars for decades; this one should quiet those folks pining for the old stick axle. Activate the Mustang's through the instrument-panel menu, and it holds the front brakes tight while you dump the clutch and perform hellacious stationary burn-



↑ The Mustang GT seems perpetually almost out of gas. Its 16-gallon fuel-tank capacity is at least a couple of milk jugs too small.

outs. Ford cautions that it is "intended for use only on racetracks" and that "racing your vehicle will void your warranty." But expecting owners to wait until the warranty is up to engage this function is like thinking Justin Verlander is waiting until marriage to test-drive Kate Upton.

For as similar as they are dimensionally, the Mustang feels dramatically different from the Camaro. It's just 2.3 inches shorter, 0.1 inch narrower, and 0.2 inch taller. But the Mustang's higher side glass grants the driver spectacular views all around, and trim B- and C-pillars make this the only car of the bunch that doesn't desperately need a rearview camera. The

## ★ FINAL RESULTS

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RANK

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Maximum points available

Ford Mustang

Chevrolet Camaro

Dodge Challenger

### VEHICLE

DRIVER COMFORT	10	9	7	8
ERGONOMICS	10	8	7	8
REAR-SEAT COMFORT	5	1	2	3
REAR-SEAT SPACE*	5	3	3	5
TRUNK SPACE*	5	4	3	5
FEATURES/AMENITIES*	10	10	6	6
FIT AND FINISH	10	9	7	8
INTERIOR STYLING	10	9	6	7
EXTERIOR STYLING	10	10	9	8
REBATES/EXTRAS*	5	0	0	0
AS-TESTED PRICE*	20	18	19	20
<b>SUBTOTAL</b>	<b>100</b>	<b>81</b>	<b>69</b>	<b>78</b>

### POWERTRAIN

1/4-MILE ACCELERATION*	20	20	20	20
FLEXIBILITY*	5	4	4	4
FUEL ECONOMY*	10	10	10	9
ENGINE NVH	10	9	9	10
TRANSMISSION	10	9	9	9
<b>SUBTOTAL</b>	<b>55</b>	<b>52</b>	<b>52</b>	<b>52</b>

### CHASSIS

PERFORMANCE*	20	18	20	16
STEERING FEEL	10	9	10	7
BRAKE FEEL	10	9	8	7
HANDLING	10	9	10	6
RIDE	10	9	7	9
<b>SUBTOTAL</b>	<b>60</b>	<b>54</b>	<b>55</b>	<b>45</b>

### EXPERIENCE

FUN TO DRIVE	25	24	24	20
<b>GRAND TOTAL</b>	<b>240</b>	<b>211</b>	<b>200</b>	<b>195</b>

\* These objective scores are calculated from the vehicle's dimensions, capacities, rebates and extras, and/or test results.



stitched dash pad, soft-touch panels, and matte-silver toggle switches give the impression that designers fussed over every detail. A compact shifter that could have come from a Honda slides through snug gates as it actuates a tight new linkage. Certain aspects of the interior, such as the "ground speed" label in the speedometer and the vacuum gauge atop the center stack, slip into aeronautical silliness, but the Mustang's interior is far and away the sharpest in class.

We voted the Challenger's engine and the Camaro's chassis our favorites, but both of those cars have glaring shortcomings not found in the Mustang. That bandwidth and adaptability make the Mustang our choice as the best product of Detroit's muscle-car revival. ■

# New AMERICAN SUCCESS Stories



## JAKE BRONSTEIN

FOUNDER & CEO,  
FLINT AND TINDER

CHRYSLER IS PROUD TO CELEBRATE INDIVIDUALS WHO  
EMBODY THE NEW SPIRIT OF AMERICAN SUCCESS



*James Bronstein founded Flint and Tinder in 2012 as a purveyor of men's underwear. Then he took his idea for the "10-Year Hoodie"—a sweatshirt with a decade-long guarantee and free mending service—to Kickstarter, and raised over a million dollars, making the brand the highest grossing crowd-funded fashion company of all time.*

**HOW IT ALL BEGAN:** Bronstein, now 36, didn't start out to make it in the menswear business. "Initially I was trying to start a marketing company. When I couldn't find a client I wanted to work with, I became my own client," he says. "I began by making products I'd like to own myself. I attribute the success we've had to always being reachable and accountable to the end-customer, and never quitting."

*"I didn't want to just make it here—I wanted to make it better here."*

**ON MADE IN AMERICA:** As a small company, Bronstein saw an opportunity to solve problems in a new way. "When we started, many of the manufacturers we met here in the U.S. felt defeated," he says. "They wouldn't even bid on projects unless you assured them that you weren't taking bids internationally." But Bronstein wasn't looking to manufacture his line as cheaply as possible; nor did he expect his customers to pay more because the products were made in America. "Solving problems is fun. Along with our partners we're trying to make things better."

**THE AHA MOMENT:** The moment when Bronstein really knew he had made it didn't happen on Kickstarter: it happened at brunch. "The guy sitting next to me was wearing a 10-Year Hoodie. I complimented him on it; he had no idea who I was, and he tried to convince me to buy one. He was passionate about it for all of the reasons I hoped a customer would be. It was an amazing feeling."

**ON SUCCESS:** "Success is pursuing your passions and making choices you're proud of. But it's not something you need to work your whole life to earn. You can have it now if you want it," says Bronstein. "It might not mean you're rich, but it does mean working doesn't have to feel like a chore and happiness doesn't have to be something you save for later."



Visit [CarandDriver.com/Chrysler200](http://CarandDriver.com/Chrysler200)  
or scan this page with the LAYAR app  
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*Porsche Macan Turbo* ➤





# ARMAGEDDON DAYS ARE HERE AGAIN

**PORSCHE DOWNSIZES THE  
CAYENNE TO GREAT EFFECT.**

*by Jeff Sabatini*

*photography by  
Marc  
Urbano*

The world will forever remember the tragedy of September 25, 2002. Porsche unveiled the Cayenne on that day, shocking the Paris auto-show crowd with a five-door SUV so horrid to behold that, after gazing upon it, no fewer than 17 members of the media were turned to stone. Nine others were then crushed when the vehicle, which outweighed a family of elephants, hurtled wildly off the stage. The company's reaction has verily defined corporate callousness ever since: Porsche announced that it was immediately ceasing production of its 911 and destroying all spare parts for the venerable sports car.

So, that's not entirely true. But reactions to Porsche's first foray outside of sports cars were no less fantastical. One infamous media gadfly proclaimed that the Cayenne threatened to "destroy the very soul of the company," presaging the Supreme Court's 2010 Citizens United decision by a good eight years. The *New York Times* published a lengthy



story in which one 911 owner said: “Every S.U.V. I’ve seen is driven by some soccer mom on her cellphone. I hate these people, and that Porsche would throw me into that category made me speechless.” Our own reaction was only slightly more levelheaded: “It’s either a brilliant marketing scheme or a sure sign that The End is near.”

Twelve years later, Rapture is still a ways off (we hope), and Porsche is back at it with the 2015 Macan. This time, the true disciples of the left-handed key slot will find cause to complain that Porsche’s smaller crossover is based on the Audi Q5, with which it shares some structure and a 110.5-inch wheelbase. Perhaps Porsche Design should work up a pitchfork for the catalog—might be a hot seller. Or maybe the faithful could just accept that Porsche knows what the hell it’s doing. Starting with a few common stampings and fleshing out the rest with exclusive Porsche kit, the company has produced the most-amazing-to-drive crossover ever unleashed on Starbucks drive-thrus.

We’ll get to that fun part of the story shortly. First, we’ll give those of you who like to complain about the utter lack of affordability of every car we feature in these pages time to defenestrate your magazine. If ever you folks were right, it would be now. The Macan Turbo has a base price of \$73,295, while the Macan S, which also happens to be turbocharged, starts at \$50,895. But the one you see pictured here rings the bell at an almost-completely loaded \$104,440. Yes, Rod Serling himself delivered our test car.

Defend if you will the personal choices of one-percenters who might buy a six-figure Macan, but the window sticker on our test vehicle is indefensible, even by Porsche’s exaggerated standards. The staff at *The Price Is Right* could create an entire game out of its \$31,145 in extras, including a \$140 fire extinguisher (kinda reasonable for a fire extinguisher, actually); the \$990 “thermally and noise insulating privacy glass;” and the \$3300 911 Turbo-style wheels, which scale up the stock rims from 19 to 21 inches. Some options make better sense: air suspension with PASM (adaptive dampers) for \$1385, Porsche Torque Vectoring Plus for \$1490, and the Sport Chrono package with launch control for



## PORSCHE MACAN TURBO

- ✚ Great seats, looks like a Porsche, drives like a Porsche.
- Stiff ride, priced like a Porsche, doesn’t much sound like a Porsche.
- The sports car of crossovers.

\$1290. And the Smoking package, which seems worth getting even if you don’t smoke, just because it’s free.

None of the Q5 shows—certainly not in the new sheetmetal and aluminum clamshell hood. Roughly two inches shorter in height than the Q5, the Macan’s greenhouse appears comparatively shrunken. Huge wheels and 295/35-sized tires so threaten to overwhelm the balance between the upper and lower sections of the vehicle that Porsche’s stylists created a contrast panel running horizontally just above the rockers. Borrowing vernacular from the corporate dictionary, this “side-blade” does, in fact, keep the design from appearing cartoonish.

A greater rake to the D-pillar shorts the Macan’s cargo hold by more than a third compared with the Audi’s, but the loss of volume is mostly in the vertical plane. There’s still sufficient space to stow luggage flat on the load floor, though its lip is rather high off the ground.

Porsche fashioned the interior after its other vehicles, with the key to the driver’s left and the ubiquitous sloping center console on the right. In between is a thick and deeply contoured three-spoke multifunction steering wheel with proper paddle shifters, shared with the 918 Spyder. Three interlinked circular gauges in the instrument panel match those found in the entry-level mid-engined Porsches and remind the driver that the Macan is a junior model; 911s, Cayennes, and Panameras have five. The Sport Chrono clock sits atop the center dashboard above a standard-issue seven-inch touch screen for the navigation and infotainment system. Adjustable sport seats plucked from the corporate parts bin set a new class standard for lateral support, with enough side and thigh bolstering to serve as an incentive to stick with your diet. The second row is awfully tight, too, but not in the good way.

Nowhere is the departure from Volkswagen Group’s modular longitudinal platform more apparent than in the Macan Turbo’s powertrain. Porsche bolts two turbochargers to the 3.6-liter, 90-degree V-6 from the Panamera, boosting peak horsepower to 400. Torque plateaus at 406 pound-feet by 1350 rpm. With four-wheel drive and a seven-speed dual-clutch PDK transmission rather than the Tiptronic torque-converter automatic in the Cayenne, the Macan Turbo does a credible imitation of a 911 at the test track. Using the optional launch control, we clocked our





Macan at 4.2 seconds to 60 mph. This is a full second quicker than the Audi SQ5, the previous standard-bearer for crossover overkill. The turbo V-6 pulls hard all the way to its 6800-rpm redline, though above 5000, the engine is more groaning than singing; a Porsche aria is not part of the Macan's entertainment package.

No, a Macan is not a sports car—at 4565 pounds, the Turbo lugs a lot of pig iron—but we pulled 0.89 g on the skidpad, a respectable number that is competitive with some excellent sports sedans. Would it be too sarcastic to point out that, with the Macan, Porsche has at least addressed the long-standing complaint that the Cayenne could stand to lose 500 pounds?

Braking events in the Macan Turbo are almost as spectacular as the PDK-assisted launches, with a firm pedal generating fade-free stops from 70 mph in just 150 feet. That's just two feet longer than the last Cayman stop we measured. While you won't drive a Macan Turbo with the verve of one of Porsche's coupes, there's no crossover that even comes close to delivering so many thrills. And though we have yet to test the

↑ [Top: There is really nothing SUVish about the Macan's look. In profile it looks most like a Citroën C4 Cactus. Look it up; we'll wait.](#)

theory, we imagine it might be easier to talk yourself out of a ticket from behind the wheel of a Macan than a Cayman.

Indeed, it's not quite a Porsche sports car: Little of what's happening at the Macan's contact patches gets communicated through its wheel, though the electrically assisted steering is satisfyingly **heavy** and direct. There is an artificiality to the Macan Turbo's handling, bolstered as it is by physics-defying technology. The torque-vectoring differential and adaptive suspension make it seem smaller and lighter during cornering, at least until it eventually succumbs to understeer. Saying it drives like a smaller Cayenne is not only obvious but accurate.

Macans equipped with the air suspension ride 0.6 inch lower than those with standard steel springs and can be lowered a further 0.4 inch via a button on the center console. We found that dropping the center of gravity with this low mode to be preferable, minimizing body lean without

sacrificing any ride quality. In each of the three on-road chassis settings (comfort, sport, and sport plus), our Macan struggled to absorb hard impacts and rough pavement, likely a byproduct of its 21-inch wheels. But when the surface is smooth, the Macan flattens out undulations and off-camber bends with a tenacity worthy of the Porsche crest.

Of course, that crest is part of the attraction for many status-conscious buyers, which is what truly irks the die-hards more than any actual or perceived inadequacies in performance. Further to that point, Porsche has been charged with developing the Macan specifically to target women. This allegation is levied pretty much every time the company introduces a new model that is not a GT2 RS, and the "chick car" trope is as inaccurate and insulting as ever.

But a legitimate criticism can be levied against Porsche here. The first Cayenne was a fresh idea that can claim at least a co-author credit for rewriting the definition of the SUV. Yet, Porsche's great innovation with the Macan seems to be its price. It is now selling a smaller package, the Macan, for the same amount of money it formerly charged for a larger one, the Cayenne. The base 2014 Cayenne, a model that Porsche eliminated when it announced refreshed models for 2015, started at \$50,595, which is \$300 below the Macan S. And the new Cayenne S, which will use the same turbocharged V-6 as the Macan Turbo, is now \$75,095, \$7300 more than last year.

Yes, the Macan is every bit another outstanding Porsche. And a brilliant marketing scheme as well.



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# PORSCHE MACAN TURBO

## SPECIFICATIONS

### PRICE

**AS TESTED** ..... \$104,440  
**BASE** ..... \$73,295

**VEHICLE TYPE:** front-engine, 4-wheel-drive, 5-passenger, 5-door wagon

**OPTIONS:** Burmester sound system, \$4290; 21-inch wheels, \$3300; gray leather interior, \$1730; adaptive cruise control, \$1600; Porsche Torque Vectoring Plus, \$1490; backup camera with front and rear park assist, \$1460; air springs with PASM, \$1385; lane-keep assist and lane-change assist, \$1380; Sport Chrono package, \$1290; thermally and noise-insulating glass, \$990; carbon-fiber interior package, \$940; Porsche Entry & Drive, \$810; carbon-fiber sideblades, \$720; rhodium silver metallic paint, \$690; ventilated front seats, \$660; trailer hitch, \$650; aluminum gear selector, \$645; voice control, \$595; Porsche Dynamic Light System Plus, \$580; Porsche crest on headrests, \$570; heated front and rear seats, \$525; 6-disc CD/DVD changer, \$520; three-zone climate control, \$510; auto-dimming mirrors, \$420; Porsche Car Connect, \$420; cargo management system, \$380; heated carbon-fiber sport steering wheel, \$365; painted key, \$365; comfort lighting package, \$325; telephone module, \$260; rear-window sunshades, \$250; black window trim, \$230; online services, \$210; center caps with colored Porsche crest, \$185; leather key pouch, \$165; fire extinguisher, \$140; ski bag, \$100; smoking package, \$0

**STANDARD:** power windows, seats, and locks; remote locking; cruise control; tilting and telescoping steering wheel; rear wiper

**AUDIO SYSTEM:** satellite radio; CD changer; DVD entertainment; media storage; minijack, USB, and Bluetooth-audio inputs; 16 speakers

### ENGINE

twin-turbocharged and intercooled V-6, aluminum block and heads

**BORE X STROKE** ... 3.78 x 3.27 in, 96.0 x 83.0 mm

**DISPLACEMENT** ..... 220 cu in, 3605 cc

**COMPRESSION RATIO** ..... 10.5:1

**FUEL DELIVERY SYSTEM** ..... direct injection

**TURBOCHARGERS** ..... BorgWarner KO series

**MAXIMUM BOOST PRESSURE** ..... 17.4 psi

**VALVE GEAR:** double overhead cams, 4 valves per cylinder, hydraulic lifters, variable intake-valve timing and lift and exhaust-valve timing

**REDLINE/FUEL CUTOFF** ..... 6800/7000 rpm

**POWER** ..... 400 hp @ 6000 rpm

**TORQUE** ..... 406 lb-ft @ 1350 rpm

### DRIVETRAIN

**TRANSMISSION** ..... 7-speed dual-clutch automatic with manual shifting mode

**FINAL-DRIVE RATIO** ..... 4.67:1, rear limited slip

**4-WHEEL-DRIVE SYSTEM** ..... full time with automatic front-axle engagement, hill-descent control

**TRANSFER-GEAR RATIO** ..... 1.13:1

GEAR	RATIO	MPH PER 1000 RPM	MAX SPEED IN GEAR (rpm)
1	3.69	4.7	33 mph (7000)
2	2.15	8.3	58 mph (7000)
3	1.41	12.4	87 mph (7000)
4	1.03	19.4	136 mph (7000)
5	0.79	22.0	154 mph (7000)
6	0.63	27.6	164 mph (5900)
7	0.52	33.4	160 mph (4800)

### CHASSIS

unit construction with a rubber-isolated rear subframe

**BODY MATERIAL:** steel and aluminum stampings

### STEERING

rack-and-pinion with variable electric power assist

### EXTERIOR DIMENSIONS

<b>WHEELBASE</b> .....	110.5 in
<b>LENGTH</b> .....	185.0 in
<b>WIDTH</b> .....	76.1 in
<b>HEIGHT</b> .....	63.4 in
<b>FRONT TRACK</b> .....	65.2 in
<b>REAR TRACK</b> .....	65.0 in
<b>GROUND CLEARANCE</b> .....	71.9 in

### INTERIOR DIMENSIONS

<b>SAE VOLUME</b> .....	F: 51* cu ft R: 45* cu ft
<b>CARGO (SEATS UP/MAX)</b> .....	18/53 cu ft

**RATIO** ..... 14.3:1

**TURNS LOCK-TO-LOCK** ..... 2.6

**TURNING CIRCLE CURB-TO-CURB** ..... 39.2 ft

### SUSPENSION

**F:** ind; 2 lateral links and 2 diagonal links per side; air springs; 2-position cockpit-adjustable electronically controlled dampers; anti-roll bar

**R:** ind; 1 control arm, 1 lateral link, 1 diagonal link, and a toe-control link per side; air springs; 2-position cockpit-adjustable electronically controlled dampers; anti-roll bar

### BRAKES

**F:** 14.2 x 1.4-in vented disc

**R:** 14.0 x 1.1-in vented disc

**STABILITY CONTROL** ..... fully defeatable, launch control

### WHEELS AND TIRES

**WHEEL SIZE/CONSTRUCTION** ..... F: 9.0 x 21 in R: 10.0 x 21 in/ forged aluminum

**TIRES** ..... Michelin Latitude Sport 3 295/35R-21 103Y

## CAR AND DRIVER TEST RESULTS

### ACCELERATION

<b>ZERO TO</b> .....	<b>SECONDS</b>
30 MPH .....	1.5
40 MPH .....	2.3
50 MPH .....	3.2
<b>60 MPH</b> .....	<b>4.2</b>
70 MPH .....	5.6
80 MPH .....	7.1
90 MPH .....	8.9
<b>100 MPH</b> .....	<b>11.0</b>
110 MPH .....	13.5
120 MPH .....	16.8
130 MPH .....	21.1
140 MPH .....	26.7
<b>ROLLING START, 5-60 MPH</b> .....	<b>4.8</b>
<b>TOP GEAR, 30-50 MPH</b> .....	<b>2.7</b>
<b>TOP GEAR, 50-70 MPH</b> .....	<b>3.6</b>
<b>1/4-MILE</b> .....	<b>12.9 sec @ 107 mph</b>
<b>TOP SPEED (GOV LTD)</b> .....	<b>164 mph</b>

**TEST NOTES:** Lives up to "Turbo" badge. Launch control gets this two-ton potato off the line like a 911. Acceleration tapers off a bit at triple-digit speed. Every run returned nearly identical times.

### HANDLING

<b>ROADHOLDING, 300-FT-DIA SKIDPAD</b> .....	<b>0.89 g</b>
<b>UNDERSTEER</b> .....	<b>MODERATE</b>

**TEST NOTES:** Impressive body control, though more understeer and less grip than expected from the 295-section-width tires. That's nearly Chevy Camaro Z/28 tire meat!

### BRAKING, 70-TO-ZERO MPH

<b>FIRST STOP</b> .....	<b>150 ft</b>
<b>SHORTEST STOP</b> .....	<b>150 ft</b>
<b>LONGEST STOP</b> .....	<b>151 ft</b>
<b>FADE RATING</b> .....	<b>NONE</b>

**TEST NOTES:** Porsche didn't skimp on the braking system. Zero fade with sports-car performance. Like the current Boxsters and Caymans, there is a little breathing room at the top of the pedal travel.

### WEIGHT

<b>CURB</b> .....	<b>4565 lb</b>
<b>PER HORSEPOWER</b> .....	<b>11.4 lb</b>
<b>DISTRIBUTION</b> ..... F: 54.7% R: 45.3%	
<b>CENTER-OF-GRAVITY HEIGHT</b> .....	<b>24.0 in</b>
<b>TOWING CAPACITY</b> .....	<b>1653 lb</b>

### FUEL

<b>CAPACITY</b> .....	<b>19.8 gal</b>
<b>OCTANE</b> .....	<b>91 (required)</b>
<b>EPA CITY/HWY</b> .....	<b>17/23 mpg</b>
<b>C/D OBSERVED</b> .....	<b>16 mpg</b>

### INTERIOR SOUND LEVEL

<b>IDLE</b> .....	<b>45 dBA</b>
<b>FULL THROTTLE</b> .....	<b>78 dBA</b>
<b>70-MPH CRUISING</b> .....	<b>71 dBA</b>

tested by K.C. COLWELL  
in Chelsea, Michigan



## COMPETITORS

AUDI SQ5 (3.0-L V-6, 354 HP, 8-SP AUTO)

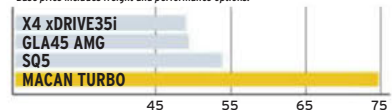
BMW X4 xDRIVE35i (3.0-L I-6, 300 HP, 8-SP AUTO)

MERCEDES-BENZ GLA45 AMG (2.0-L I-4, 355 HP, 7-SP AUTO)

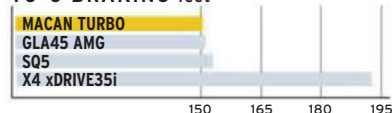
PORSCHE MACAN TURBO (3.6-L V-6, 400 HP, 7-SP AUTO)

**CURRENT BASE PRICE\*** dollars x 1000

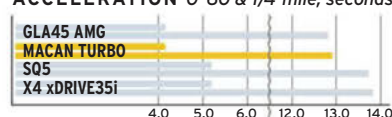
\*Base price includes freight and performance options.



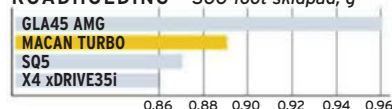
### 70-0 BRAKING feet



### ACCELERATION 0-60 & 1/4-mile, seconds



### ROADHOLDING 300-foot skidpad, g



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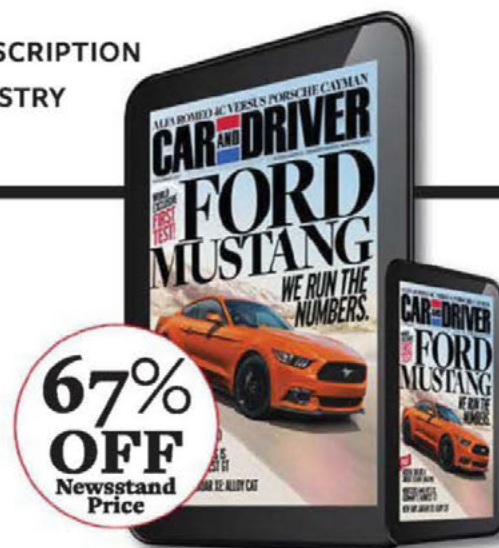
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# Horses of

**THE FINAL BATTLE  
BETWEEN HORSE AND  
CAR IS HAPPENING  
IN CENTRAL PARK.**

*by John Pearley Huffman*

*photography by Daniel Byrne*



◀ Horse



# Babylon

. comparo

*“We are as famous as the gondolas in Venice. That’s how iconic we are in this city.”*

So says Ian McKeever with his Irish brogue and the hyperbole that apparently affects all the horse-drawn-carriage drivers in New York City’s Central Park. “I’d say that 90 percent of the horses you see here, if they weren’t here, they’d be dead.”

Thing is, New York’s mayor, Bill de Blasio, wants them gone. And the animal-rights activists who helped elect him last year have already produced an alternative: a 6400-pound electric dreadnought styled to resemble brass-era motor carriages. Called the Horseless eCarriage, it’s intended to keep all the 160-or-so current carriage drivers—every one a card-carrying



▲ Horseless eCarriage



Teamster—employed, while the 220-or-so geldings and mares currently in the tourist business are retired to glistening glades where they'll find gentle contentment among self-actualized unicorns and Technicolor rainbows. Or, conversely, if you believe the drivers, shipped to a rendering plant.

Cars won the war against horses more than 100 years ago, but here's one lingering battle. It was a natural for a comparison test, though it would have to be conducted in the middle of traffic in one of the busiest cities on earth. Except that the private Central Park Conservancy that manages the place generally despises all automobiles and doesn't want the eCarriage in the park, much less a car magazine testing one. And the leaders of the pro-horse Historic Horse-Drawn Carriages of Central Park NYC wanted nothing to do with us, either. Undeterred by the challenges and unwounded by those slights, we did it anyhow.

Exploring the governance of New York City is unpleasant. But to tell this story, we must. Gotham politics are an intramural blood sport. Virtually everyone involved is a Democrat, the rhetoric is over the top, the newspapers blast lurid headlines, celebrities stir

the pot on both sides, and real estate is often lurking at the core of every issue. All New Yorkers have an opinion, though only 24 percent of eligible voters turned out for the last mayoral election.

New Yorkers for Clean, Livable and Safe Streets (NYCLASS) is the animal-rights group behind the eCarriage. Founded in 2008 by

Steve Nislick, a 70-ish parking-garage mogul who lives near Central Park, the group has relentlessly portrayed the horse-drawn-carriage owners and drivers as cruel and abusive to the animals. It's also been politically savvy in backing de Blasio. According to the New York *Daily News*, Nislick contributed \$174,000 for the 2013 Democratic primary, including money for attack ads against putative front-runner Christine Quinn that many believe opened the door for de Blasio's nomination. The mayor owes him and his horse-hugging cohorts.

Considering Nislick's real-estate acumen, the carriage drivers read into the NYCLASS campaign not an effort to save equines, but a cynically veiled attempt to make a deal for the ridiculously valuable land under the stables in which their horses are housed. "I've never been interested in these properties and do not want them now," Nislick wrote on the NYCLASS website in January, further promising to not bid on any of the four stables, all located in the rapidly gentrifying west-side neighborhood of Hell's Kitchen, should they come up for sale.

While de Blasio has promised to get rid of the horse-drawn carriages, no such legislation has yet made it to the contentious 51-member city council. And the issue seems to be slipping down the mayor's list of political priorities. NYCLASS, though, had the eCarriage prototype ready for us to drive.

## 2. Horseless eCarriage

Jason Wenig of the The Creative Workshop, a car restoration and fabrication shop in Dania Beach, Florida, is a smart carbuilder. Contracted by NYCLASS to design and build the first eCarriage, Wenig stuck with proven components and came up with a design that hits a sweet spot between Disneyland and downtown 1907.

Under the faux olde-tyme bodywork sits a straightforward steel lad-

← Behind its old-style wheels are modern disc brakes, but the eCarriage doesn't know that it shouldn't hit people. Below right: Horses don't have any horns.





der frame with solid axles on leaf springs spanning a 158-inch wheelbase. Between the frame rails are 72 lithium-ion battery cells sending amperage forward to an 84-hp AC motor. The 184 pound-feet of torque is then routed through a reduction gearset to a Dana 60 rear axle.

It's a big hoss. The eCarriage's wheelbase is 28 inches longer than a 2015 Suburban's. The eCarriage is taller, too, rising just over seven feet to the top of its flat windshield, almost a full foot taller than a Sub. Small and delicate this three-ton horse liberator is not.

"I called almost everywhere looking for batteries," says Wenig, with a tinge of Brooklyn in his voice. "Flux, Calib Power, A123 . . . none of them were eager to work with me. So I wound up with these batteries from Sinopoly in China." The array charges through a standard SAE J1772 connector in about six hours. Fully charged, says Wenig, it's good for 100 miles—maybe longer when restricted to a maximum 5 mph within Central Park.

Along Fifth Avenue, we saw a top speed of 24 mph, which took the eCarriage more than 15 seconds to reach. The acceleration itself is easygoing despite a wailing whine from the reduction gears (something to be engineered out if it goes into production). Wenig and his staff of 10 built the brass-era body from aluminum and wood, and the craftsmanship is impressive. The paint is perfect and the details are beautifully rendered down to the custom grab handles.

It's only up close that one notices that the brake drums are painted covers over more-modern discs and the ancient-looking oil headlamps actually contain LED elements.

Hauling one's self up can challenge anyone's dignity, but the three rows of bench seats covered in button-tufted vinyl are comfortable and it's easy to stretch out in back. The thick-rimmed wood steering wheel sits on a towering column that feeds straight down to an unassisted 16:1 recirculating-ball steering gear.

Combine the primitive column with replica BFGoodrich Silvertown bias-ply truck tires mounted on 6.0x24-inch Forgeline aluminum wheels and the result is hazy steering. The effort isn't high, but the reactions are slow. That's fine at low speeds and with no traffic, but unnerving when a squadron of Camry cabs squeezes the doorless eCarriage against a double-decker tourist bus.

The eCarriage doesn't enjoy the deference from other traffic that its horse-drawn competition does. Especially when making the U-turn the horses regularly execute in the middle of 59th Street to get back to Central Park's entrance. But driving through the city, crowds enthusiastically flocked to the eCarriage. Wenig's design is a knockout right now, at the height of its novelty. But can it sustain that if it becomes a part of the city's background noise?

What the eCarriage lacks is history. If there were ever a time when motorized carriages chugged through Central Park at the turn of the 20th century, it was a flickering moment. Meanwhile, horses have cruised its greenscaped byways for more than 150 years.

The ultimate obstacle for the eCarriage, though, may be economic. Even if the vehicle price drops to \$150,000 each, as NYCLASS hopes (the prototype cost nearly three times as much), that's substantially more than a \$2500 horse plus a brand-new



## Horseless eCarriage

**+** Friendly countenance, nice build quality, can be recharged after dying.

**-** Expensive, not yet welcome in Central Park.

**=** Nostalgia for a time that never actually was.

VEHICLE	HORSE-DRAWN CARRIAGE	HORSELESS eCARRIAGE
BASE PRICE	\$10,000*	\$150,000*
DIMENSIONS		
LENGTH	268 inches	220 inches
WIDTH	73 inches	88 inches
HEIGHT	21.5 hands	86 inches
WHEELBASE	100 inches	158 inches
FRONT TRACK	57 inches	76 inches
REAR TRACK	62 inches	75 inches
POWERTRAIN		
PROPULSION	Hudson, 11-year-old gelding	permanent-magnet synchronous AC motor
POWER	1 hp	84 hp
ENERGY	grain and oats	46-kWh lithium-ion battery
LB PER HP	1700.0	76.2
DRIVELINE		
TRANSMISSION	collar and hames harness	1-speed direct drive
DRIVEN APPENDAGES/WHEELS	all	rear
CHASSIS		
SUSPENSION	<b>F:</b> rigid axle, leaf springs <b>R:</b> rigid axle, leaf springs	<b>F:</b> rigid axle, leaf springs <b>R:</b> rigid axle, leaf springs
BRAKES	<b>F:</b> steel horseshoes <b>R:</b> 10.5-inch drum	<b>F:</b> 12.5-inch vented disc <b>R:</b> 13.0-inch vented disc
TIRES	<b>F:</b> 41x2, solid rubber <b>R:</b> 53x2, solid rubber	BFGoodrich Silvertown 38x7, bias ply

C/D TEST RESULTS		
ACCELERATION		
0-3 MPH	2.0 sec	3.2 sec
0-20 MPH	-	13.5 sec
TOP SPEED	4 mph (gait ltd)	24 mph (redline ltd)
WEIGHT		
CURB	1700 pounds	6400 pounds

\*C/D est.

tested in New York, New York, by ERIC TINGWALL

\$7500 carriage from the Troyer Carriage Company of Shipshewana, Indiana. Even factoring in \$1300 a month to care for each horse, the eCarriage numbers are tough to crunch.

## 1. Hudson the Gelding + Carriage

New York City awards only 68 taxi-like medallions authorizing operation of a horse and carriage within Central Park. And if you believe what the carriage drivers say, every horse and every carriage has been on *Sex and the City* and/or *Law & Order* several times.

The carriages that line up along 59th Street waiting for tourists to take a 20-minute loop through the park for \$50 aren't pristine contraptions. The best of them are a bit faded, most are threadbare,

and a few are just plain ragged. The horses that pull them are ordinary draft animals—usually mixed-breed geldings or mares that are about 16 hands (5.3 feet) tall at the shoulder—with supernaturally calm temperaments. The drivers are a grab bag of immigrants with a few native New Yorkers mixed in. Their industriousness, fashion sense, and hygiene, both human and equine, vary greatly.

We took the deluxe 40-minute tour for \$90 with Turguy Gunn, a Turk with four years of driving experience. Hudson, an 11-year-old gelding, was pulling. “He just came back from vacation,” Gunn explained about Hudson. “He’s been in the pasture for like three months like the law says. He’s going to be ready for Christmastime.” The law actually requires an annual five-week pasture stay for each horse.

At more than 22 feet long from the tip of Hudson’s nose to the back of the carriage, the combination isn’t small. But the carriage’s front axle pivots so the turning radius is compact. The horse’s biggest advantage is subtler than that, however: A horse-drawn carriage is effectively a semi-autonomous vehicle.

As we quietly clopped through the park, Gunn turned around in his seat to explain exactly which building along the park’s perimeter had been featured in *Ghostbusters*. He effectively left the driving up to Hudson. The horse knows the route, is smart enough to sustain the 4-mph pace, and will rarely do anything that puts the carriage in danger.

Having two brains at the controls allows the driver to interact with his customers, face to face; that’s impossible with the eCarriage. A horse just makes

### Horse-Drawn Carriage

✚ Quaint, quiet, semi-autonomous, pleasantly furry.

✚ Occasional stubbornness, no emissions controls.

✚ Working horses built civilization. Here’s one of the last that still has a job.

#### ★ FINAL RESULTS

RANK	1	2
	Horse-Drawn Carriage	Horseless eCarriage
	Maximum points available	
VEHICLE		
COMFORT	5	5
FIT AND FINISH	10	10
INTERIOR STYLING	10	9
EXTERIOR STYLING	10	10
AS-TESTED PRICE	20	1
<b>SUBTOTAL</b>	<b>55</b>	<b>35</b>
POWERTRAIN		
ACCELERATION	20	14
<b>SUBTOTAL</b>	<b>20</b>	<b>14</b>
EXPERIENCE		
AUTHENTICITY	10	7
DRIVER INTERACTION	10	2
RIDE QUALITY	10	7
FUN TO RIDE	25	20
<b>SUBTOTAL</b>	<b>55</b>	<b>36</b>
<b>GRAND TOTAL</b>	<b>130</b>	<b>85</b>

it a better tourist experience, even if you’re staring at the back end of it.

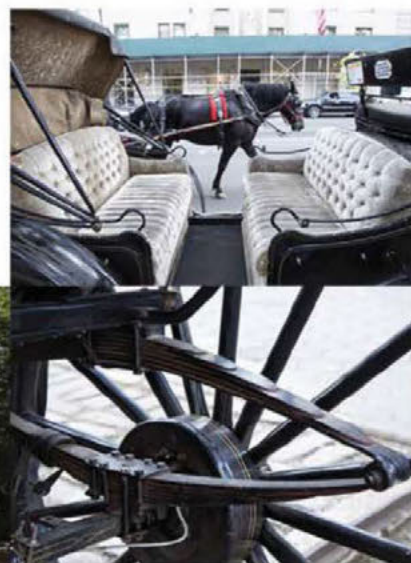
Horses aren’t the brightest animals, but they’re smart and reliable enough to be depended upon. Of course, the horses are at risk in city traffic, but so is everybody. In the past few months, two humans have been killed in the busy park by collisions with speeding bicyclists. Absolute safety is guaranteed to no animal.

“As long as people feel the horses are well taken care of, there should be no problem,” explains McKeever, who owns Hudson and the carriage he was pulling. “People can’t romanticize a machine. I can’t see any rationale for anyone to want one of those jalopies.” Romanticize a machine? Us?

Between 2007 and 2012, the equine population in this country dropped by 10 percent, according to the U.S. Department of Agriculture. When horses don’t have jobs they become expensive luxuries, especially in a recession, and fewer people are willing to pay that price. The Central Park horse-drawn carriages are one of the few chances left for people to connect with working horses and their ancestors that helped build New York City.

In the long run, though, NYCLASS will likely win this battle. If not because it’s able to get the horses banned, but because the land under the horses’ stables is so valuable that the stable owners won’t be able to resist selling.

And once the horses are gone, they won’t be coming back. 🐾



← Left: At sunset, Huffman finally popped the question. Top: Upholstery condition varies greatly. Above: Pinstriped brakes are a remnant of a gentler time in transportation.



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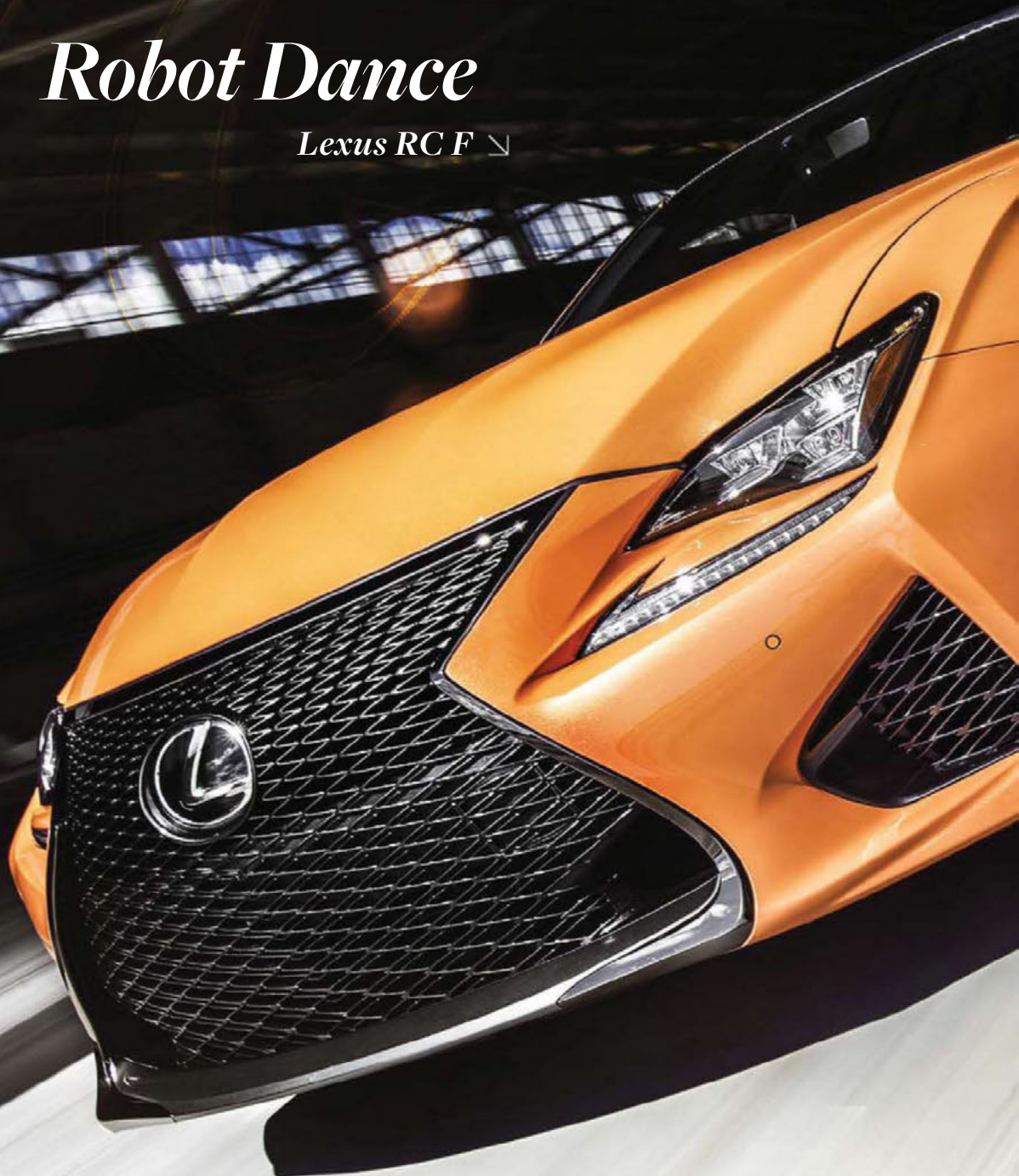


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-Axl O'Farr,  
NYCMOVIEGURU

# *Robot Dance*

*Lexus RC F* ▽







# *Lexus's new F-er looks like Gundam, moves like Rerun.*

*by K.C. Colwell  
photography by Andrew Trahan*

TYPICALLY, WHEN FULL-LINE CAR COMPANIES SET OUT to develop a coupe, they start with a sedan from the current lineup, trim two doors, and re-wrap the package in a sleeker body. A shorter wheelbase is optional. Lexus rolled up that memo and burned it before going to work on the RC. Instead, to form its new coupe's structure, Lexus combined the front clip of the GS sedan, the center section of the old IS C convertible, and the rear end of the IS sedan, using adhesives and welding and a fancy technique called laser screw welding, which allows for more frequent tacks and thus greater rigidity.

The three-piece approach makes more sense once it's explained. The GS front gives engineers the extra track width they wanted for handling. They deemed the IS rear sufficient to keep the car's dimensions tidy, and the IS C center section necessary for its inherent stiffness and shorter wheelbase. Compared with the current IS sedan, the RC coupe is roughly 1.5 inches longer, wider, and lower, but with a 2.7-inch shorter wheelbase.

The RC F we have here is the hot-rod version of the RC, and the car Lexus is using to effectively replace its IS F sedan, which does not have an analogue in this new IS generation. (Lexus's hi-po four-door will be the GS F, bigger and likely more expensive than the old M3-baiting IS F.) But the RC F is not trying to be a direct BMW M-whatever knockoff; it has its own thing going. The snug cockpit swaddles the driver with information and controls in what seems like an appropriate techno-modern, Tokyo-by-night design scheme. A high



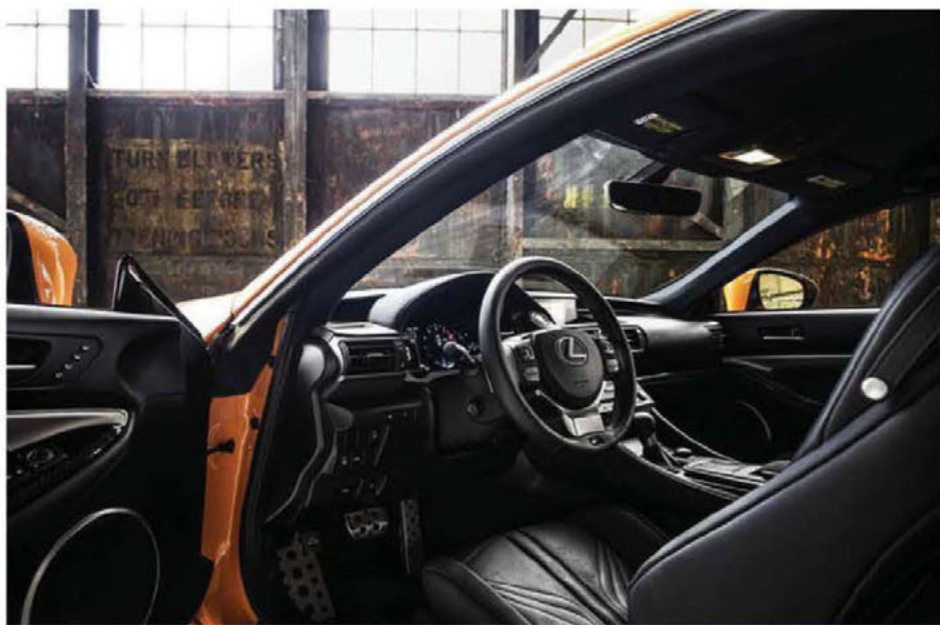


center console features an optional touch-pad that is part of the \$2840 navigation and upgraded stereo package, and the instruments showcase a morphing LCD center tach, similar to the LFA's. Nearly everything in the car can be adjusted with the haptic infotainment control pad, but there are also redundant buttons with knobs for volume and tuning, just as in the current IS.

The LCD tach changes its appearance between the four drive modes (eco, normal, sport, and sport plus) and is flanked by another screen on the left, which displays tire pressures, radio stations, g-forces, and just about everything else. A smaller analog speedometer lies to the right.

There are few occasions in life when we'd say that 467 horsepower isn't enough. This is one of them. While the IS F's old 5.0-liter V-8 got thoroughly overhauled for this new RC F, the car weighs 4048 pounds, 200-plus more than the old sedan.

Mass is the RC F's millstone. It has 400 pounds on a BMW M4 and weighs as much as the four-wheel-drive Audi RS5. In a three-way drag race, the Bimmer walks away, with the F and RS5 keeping pace through the quarter-mile. By 130 mph, the RC F has eked out a nearly two-second lead on the RS5. Keep your foot in it and a governor abruptly halts acceleration at 171 mph.





## Lexus RC F

- ❖ Swaddling seats, makes all the right noises, easy to go fast.
- ❑ Not the preferred kind of curb appeal, lacks an edge in a razor-sharp segment.
- ❑ He's not heavy, he's my ... actually, he is alarmingly heavy.

With all the data crunched, the RC F proves no quicker than the old IS F. Nor is it slower, though. We recorded a 4.3-second zero-to-60 and a quarter-mile time of 12.8 seconds, identical to a 2008 IS F. Identical, too, is the naturally aspirated V-8 wail. While muted in the cabin, pedestrians will flinch when the intake's noise flap opens and the camshaft timing changes the engine's rumble into a sweaty roar.

Lexus gets credit for adding 51 horsepower to the V-8 with something more than a software update and without resorting to forced induction (cough, *cough*, BMW). Titanium valves, all 32 of them, along with a lighter crankshaft and con-rods, allowed engineers to lift the redline by 500 rpm to 7300. Only the 8300-rpm Audi RS5 can rival the F for aural gratification; the M4's turbocharged and overly enhanced soundtrack is no match. If only the RC F were quicker for it.

More revs equals more power, but it also requires more air and fuel. Thus, the 2UR-GSE, as the V-8 is coded, gets a larger throttle body and higher-flow fuel injectors. Max power comes at 7100 rpm, while the torque peak of 389 pound-feet, up 18 from the IS F, is available at 4800 rpm. That's 400 rpm earlier than the old engine. Compression also increases to 12.3:1, from 11.8:1.

Enabling the extra power are wider-range cam phasers, giving the V-8 Atkinson-cycle capability. This improves the RC F's efficiency during cruising and under low loads and gives the RC F a 2-mpg boost in EPA highway testing over the old IS F, to 25 mpg. City fuel economy is unchanged at 16. Thirsty, the RC F chugged a gallon of premium every 15 miles during its stay here.

All the work that went into the structure is apparent from the first few turns of the wheel. An astonishingly stiff unibody means the cowl never quivers because of the stiff central section's origin as a convertible. The rigid architecture succinctly telegraphs all communication from the chassis, which is both good and bad. Push the front axle past its limit and tire chatter shimmies up the steering column, as it's supposed to. But a mercilessly pitted road sends some shudders to the spines of passengers as well. The car feels as supple as a Lexus ES on a smooth road, something the rigid, tense M4 can't claim.

The F's seats come stacked with large bolsters in the front buckets, appropriate for a car capable of 0.95 g on the skidpad. Considering the Michelin Pilot Super Sports wrapping 19-inch forged BBS wheels, that's lower than we expected, but the car comes set up with a healthy amount of

understeer. Lexus admits that it didn't want to build an intimidating car. Its goal was a PG-rated performance coupe, fun for all skill levels, and on that it has delivered.

Despite the four drive modes, the steering offers only normal and sport options. The latter, active in sport and sport plus, adds heft but no feedback. Like a stubborn toddler, the wheel communicates clearly only when its diaper is full, when the tires have gone over the edge.

Transmission logic will adapt to a particular driving style, but the eight-speed auto, another IS F carryover, responds to manual inputs without protest. Robust 15.0-inch front rotors and 13.6-inch rear rotors do an impeccable job of erasing speed without fade, though we'd prefer a pedal that wasn't muddy-feeling at the top. A 154-foot 70-to-zero stopping distance is just longer than the M4's. Considering the RC F carries extra poundage, that's a commendable performance.

↓ Below: Lexus doesn't simply ape European-car interiors but defines its own tech-heavy style. Bottom left: Seat design by H.R. Giger?



Unlike its curb weight, the RC F's base price has gone down, and at \$63,325 it is \$1200 less than the 2014 IS F. Our test car came with the Performance package, which is a big investment at \$5500. With it you get an M4-style carbon-fiber roof, carbon rear wing, and a torque-vectoring differential. The diff, a first for Toyota, has three settings independent of the drive modes: normal, slalom, and track. Slalom offers the most-aggressive torque swings. The diff effectively mitigates understeer but works only when you are on the throttle. Unadvertised is the package's 50-pound weight penalty. The carbon-fiber pieces save about 15 pounds, but the unit, with its electric motors and clutch packs, is 66 pounds heavier than the standard Torsen limited-slip diff.

In the ultrabright Molten Pearl paint, the RC F looks more brash and busy than flowing and elegant. It leans hard on the Japanese comic-book robot-superhero aesthetic. And indeed, its power-to-weight ratio is the only thing keeping the F from being an actual superhero. It may not have the outright thrust or balance of an M4, or even the style of an RS5, but the new F has a personality all its own, a Japanese Camaro with lots of buttons and displays and a boisterous voice. The IS F made its debut in 2007 as a fast but otherwise unexceptional Lexus, though quiet improvements meant that by 2011 the car was near the top of its class. Four years later, the RC F enters the market firmly planted there.

072

12.2014

caranddriver.com

road test

LEXUS  
RC F

## ▼ SPECIFICATIONS

PRICE  
AS TESTED ..... \$76,065  
BASE ..... \$63,325

**VEHICLE TYPE:** front-engine, rear-wheel-drive, 4-passenger, 2-door coupe  
**OPTIONS:** Performance package, \$5500; Premium package, \$4400; navigation with Mark Levinson audio package, \$2840  
**STANDARD:** power windows, seats, and locks; remote locking; cruise control; tilting and telescoping steering wheel  
**AUDIO SYSTEM:** satellite radio; CD player; minijack, USB, media-card, and Bluetooth-audio inputs; 17 speakers

**ENGINE**  
Atkinson-capable V-8, aluminum block and heads  
**BORE X STROKE** ... 3.70 x 3.52 in, 94.0 x 89.5 mm  
**DISPLACEMENT** ..... 303 cu in, 4969 cc  
**COMPRESSION RATIO** ..... 12.3:1  
**FUEL DELIVERY SYSTEM** ..... port and direct injection  
**VALVE GEAR:** double overhead cams, 4 valves per cylinder, variable intake- and exhaust-valve timing  
**REDLINE/FUEL CUTOFF** ..... 7300/7450 rpm  
**POWER** ..... 467 hp @ 7100 rpm  
**TORQUE** ..... 389 lb-ft @ 4800 rpm

**DRIVETRAIN**  
**TRANSMISSION** ..... 8-speed automatic with manual shifting mode  
**FINAL-DRIVE RATIO** ..... 2.94:1, limited slip

GEAR	RATIO	MPH PER 1000 RPM	MAX SPEED IN GEAR (rpm)
1	4.60	5.6	42 mph (7450)
2	2.72	9.4	70 mph (7450)
3	1.86	13.8	103 mph (7450)
4	1.46	17.5	130 mph (7400)
5	1.23	20.9	155 mph (7400)
6	1.00	25.9	171 mph (6600)
7	0.82	31.4	171 mph (5450)
8	0.69	37.9	160 mph (4225)

**CHASSIS**  
unit construction with a rubber-isolated rear subframe  
**BODY MATERIAL:** steel and aluminum stampings

**STEERING**  
rack-and-pinion with variable electric assist  
**RATIO** ..... 14.0:1  
**TURNS LOCK-TO-LOCK** ..... 2.7  
**TURNING CIRCLE CURB-TO-CURB** ..... 35.4 ft

**SUSPENSION**  
**F:** ind, unequal-length control arms, coil springs, anti-roll bar  
**R:** ind; 2 diagonal links, 2 lateral links, and a toe-control link per side; coil springs; anti-roll bar

## EXTERIOR DIMENSIONS

**WHEELBASE** ..... 107.5 in  
**LENGTH** ..... 185.2 in  
**WIDTH** ..... 72.6 in  
**HEIGHT** ..... 54.7 in  
**FRONT TRACK** ..... 61.2 in  
**REAR TRACK** ..... 61.4 in  
**GROUND CLEARANCE** ..... 5.1 in

## INTERIOR DIMENSIONS

**SAE VOLUME** ..... **F:** 50 cu ft **R:** 25 cu ft  
**TRUNK** ..... 10 cu ft

## BRAKES

**F:** 15.0 x 1.3-in vented, grooved disc  
**R:** 13.6 x 1.1-in vented, grooved disc  
**STABILITY CONTROL** ..... fully defeatable, traction off, competition mode

## WHEELS AND TIRES

**WHEEL SIZE/CONSTRUCTION** ..... **F:** 9.0 x 19 in  
..... **R:** 10.0 x 19 in forged aluminum  
**TIRES** ..... Michelin Pilot Super Sport  
..... **F:** 255/35ZR-19 (92Y)  
..... **R:** 275/35ZR-19 (96Y)

## ★ NOTABLE HIGHLIGHTS

Lexus says 70 percent of the suspension components are new, redesigned, or retuned compared with the base RC350, though the front knuckles and bearings are carried over from the IS F.

## CAR AND DRIVER TEST RESULTS

## ACCELERATION

ZERO TO	SECONDS
30 MPH	1.8
40 MPH	2.5
50 MPH	3.4
<b>60 MPH</b>	<b>4.3</b>
70 MPH	5.5
80 MPH	6.9
90 MPH	8.3
<b>100 MPH</b>	<b>9.9</b>
110 MPH	11.9
120 MPH	14.1
130 MPH	16.7
140 MPH	20.1
150 MPH	24.2
160 MPH	30.0
ROLLING START, 5-60 MPH	4.7
TOP GEAR, 30-50 MPH	3.5
TOP GEAR, 50-70 MPH	3.2
<b>1/4-MILE</b>	<b>12.8 sec @ 114 mph</b>
TOP SPEED (GOV LTD)	171 mph

**TEST NOTES:** Brake-torque to about 2000 rpm and release the brake while the revs are still climbing. Transmission kickdown during the 50-70-mph test is impressive. It takes about a second for the powertrain to go from 1600 rpm in eighth gear to 5350 rpm in second.

## INTERIOR SOUND LEVEL

IDLE	43 dBA
FULL THROTTLE	85 dBA
70-MPH CRUISING	72 dBA

tested by K.C. COLWELL  
in Chelsea, Michigan



## HANDLING

**ROADHOLDING, 200-FT-DIA SKIDPAD** ..... 0.95 g  
**UNDERSTEER** ..... MINIMAL

**TEST NOTES:** There is much less understeer with partial throttle than in off-throttle driving conditions. The torque-vectoring differential keeps the car from pushing to extremes, but the front tires shudder once you exceed the limit.

## BRAKING, 70-TO-ZERO MPH

**FIRST STOP** ..... 155 ft  
**SHORTEST STOP** ..... 154 ft  
**LONGEST STOP** ..... 160 ft  
**FADE RATING** ..... NONE

**TEST NOTES:** Pedal travel didn't grow one bit from stop one to stop six. The longest was the fourth one, and the final two stops were as short as the first two.

## WEIGHT

**CURB** ..... 4048 lb  
**PER HORSEPOWER** ..... 8.7 lb  
**DISTRIBUTION** ..... **F:** 53.6% **R:** 46.4%  
**CENTER-OF-GRAVITY HEIGHT** ..... 19.0 in

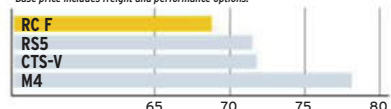
## FUEL

**CAPACITY** ..... 17.4 gal  
**OCTANE** ..... 91 (required)  
**EPA CITY/HWY** ..... 16/25 mpg  
**C/D OBSERVED** ..... 15 mpg

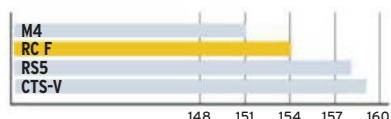
## ▼ COMPETITORS

AUDI RS5 (4.2-L V-8, 450 HP, 7-SP AUTO)  
BMW M4 (3.0-L I-6, 425 HP, 7-SP AUTO)  
CADILLAC CTS-V COUPE (6.2-L V-8, 556 HP, 6-SP AUTO)  
LEXUS RC F (5.0-L V-8, 467 HP, 8-SP AUTO)

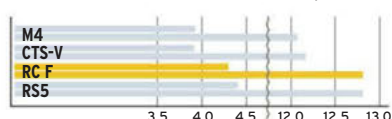
**CURRENT BASE PRICE\*** dollars x 1000  
\*Base price includes freight and performance options.



## 70-0 BRAKING feet



## ACCELERATION 0-60 &amp; 1/4-mile, seconds



## ROADHOLDING 200- or 300-ft skidpad, g



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**WE PICK UP SOME FARES IN THE  
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IN AN AGE OF TECHNOLOGICAL  
DISRUPTION, DOES  
THE CAR STILL MATTER?**



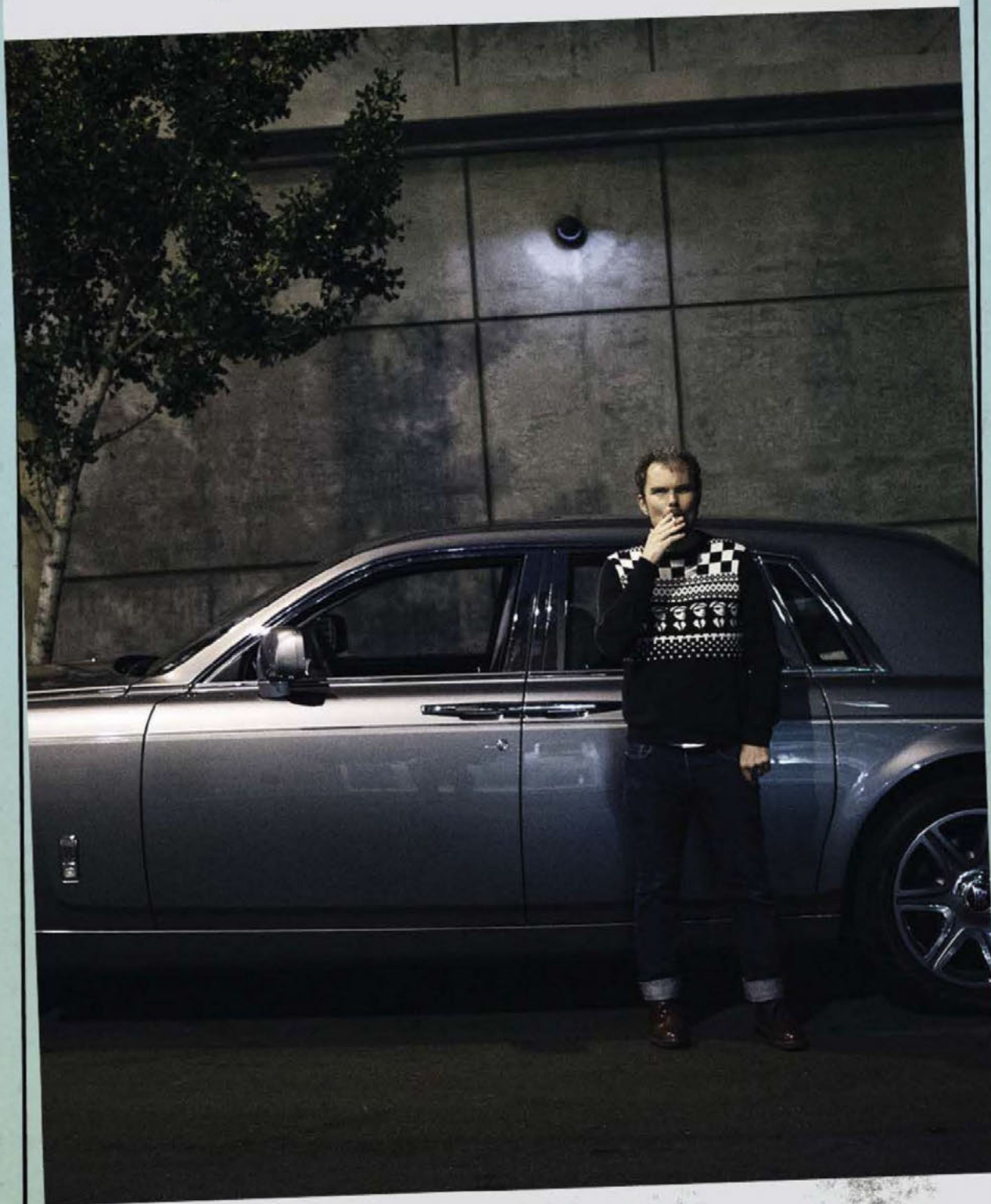
APPROVED DRIVER

Want a Silicon Valley tech job? Hop on the ride-sharing bandwagon that's giving fits to gentlemen with "India Out of Khalistan" bumper stickers and try life as an Uber driver. While the service's users are accustomed to riding in Civics and Priuses, our disdain for the ordinary is somewhat legendary. Which is how I found myself swanning around San Francisco as a completely amateur and entirely untrained (and, indeed, unlicensed) taxi driver behind the wheel of a \$490,215 hunk of weapons-grade plutocracy.

**PHOTOS** \_\_\_\_\_

**JEFF SINGER**





PLACE PHOTO HERE



Uber, the ride-sharing operation that connects smartphone-wielding drivers to app users who need a cab, springs from a deep well of Bay Area innovation. There's a culture of fiddlers here. Of tinkerers. Of, as our British cousins are fond of saying, men in sheds. Think garages and labs and cheap rehearsal spaces and warehouses, and in the rural outskirts, the odd barn. It makes nothing but sense that Uber was born here. Muni, San Francisco's public transit agency, is a long-standing joke. Taxi service has never been as widespread or convenient as it is in New York. Meanwhile, the city's Department of Parking and Traffic breeds meter maids with the ferocity of Gorgons and the ruthless efficiency of SEAL Team Six. In Manhattan, owning a car is a liability and public-transit alternatives make carlessness plausible. In the Bay Area, one often needs the service of a car to get around reliably with any haste—haste, of course, being one of the tech industry's guiding principles.

The other, at least in this latest Internet-of-Things iteration that's given us companies like Uber, is to make a profit without actually making anything. So the all-conquering monolith with the pointedly Nietzschean name doesn't concern itself with inventory, save for a stock of iPhones it leases to drivers for 10 bucks a week. With this "revolutionary and magical product" (yes, that's what Steve "Godhead" Jobs actually called the iPhone moments before introducing it in 2007) suction-cupped to the windshield of my borrowed mecha-Percheron, I set forth to see what tech-

gentrified San Francisco had wrought upon the city's long-standing relationship with the automobile.

But I was not thinking about any of this while trying to navigate the morass of South of Market to get to my next pickup. Instead, I was dedicating every ounce of my meager reserve of concentration to not bending the Rolls. Just as I wedged the car up against the curb in front of the W Hotel on 3rd Street, Lauren and Scott hopped in. Both right around 30, they were well-mannered, friendly, and slightly harried. "Can you take us to Mountain View?" Sorry, I can't. "Okay, well how about the Caltrain station?"

Caltrain was only about six blocks away. While we were dispensing model releases from our photographer and an explanation of why I was driving this elaborate Anglo-Teutonic ingot, a man appeared in the window demanding money. He was insistent, in that particular San Francisco-vagrant kind of way. Borderline aggro. It's the sort of behavior that mitigates any guilt one might have about getting paid to sit in a Rolls-Royce. We weren't forthcoming with cash, so he changed his order to fried chicken. This particular Phantom features \$82,675 in options. A deep fryer is not one of them.

I pulled away, happy to escape the hostility. We had four minutes if my passengers were to catch their train, which meant a succession of stoplight drags, winding out the Phantom's 6.8-liter V-12, grabbing the most likely lane, then depressing the wonderfully easy-to-modulate brakes to slow to a smooth halt. On a wide, one-way boulevard like 4th Street, the big Roller was in its element. Fellow motorists might long to bloody the driver's nose, but nobody wants the headache of hitting a Phantom. The right-of-way belonged to the gleaming locomotive. Lauren and Scott made their train.

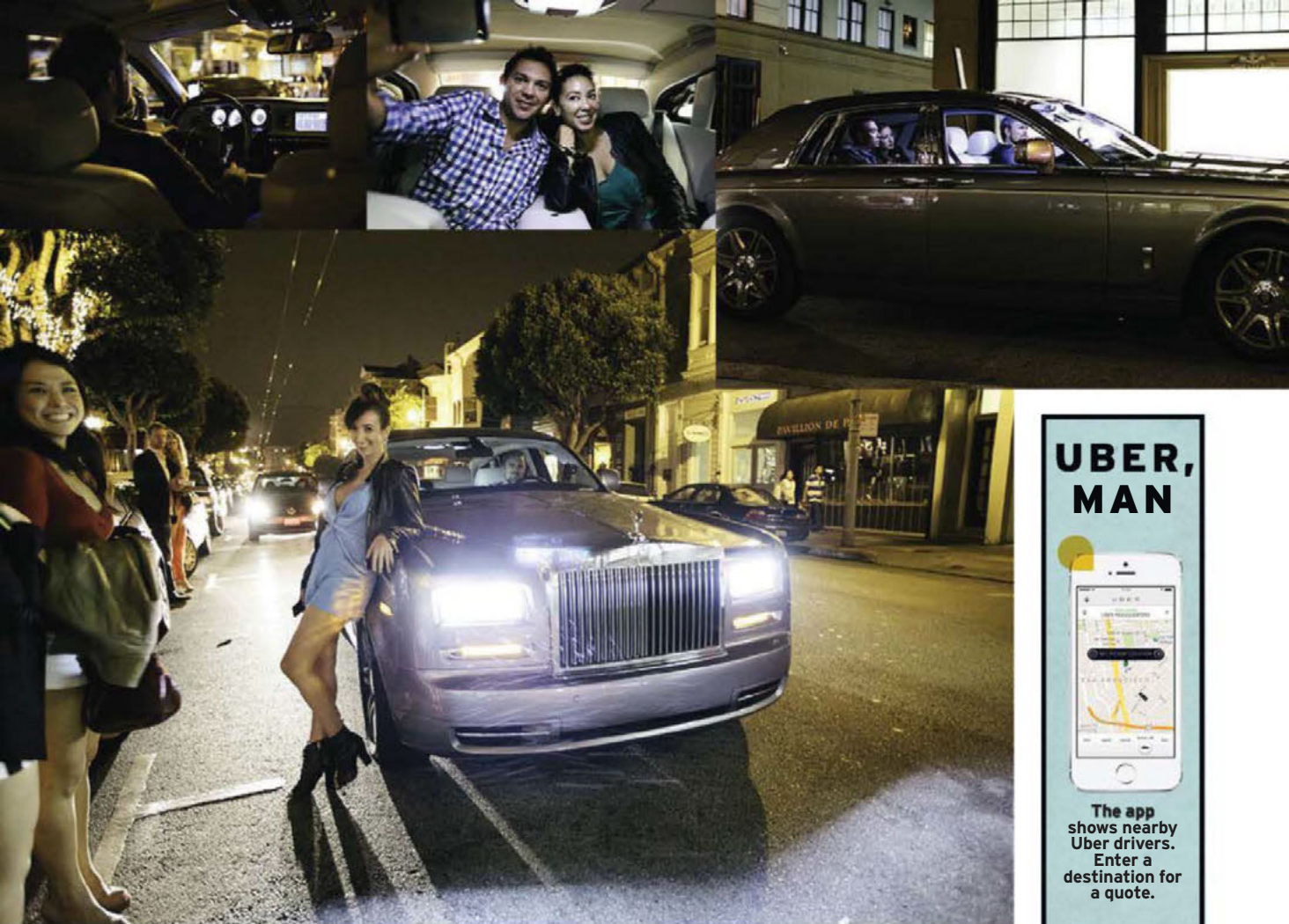
For all the Bay Area's reputation as the Mesopotamia of tech, it also has deep roots in car culture. Ken Kesey's Furthur, the famed bus that carried the Merry Pranksters, was born on the Peninsula. The Grand National Roadster Show, a display of the world's most elite hot rods, began in Oakland. Sonoma Raceway lies just to the north and Mazda Raceway is a quick jaunt south. Though Kjell Qvale has passed, his

British Motor Car Distributors lives on, selling Jaguars and Land Rovers on Van Ness Avenue. The area's other legendary auto dealer, the late Martin Swig, pioneered the multibrand dealership with the San Francisco Autocenter. Partially as a result of Swig's tireless passion for the marque, Berkeley stands as the street-parked Alfa Romeo capital of the United States. For a time, *Competition Press*, the precursor to *Autoweek*, was even based in San Francisco.

More recently, a few tinkerers got together south of The City (to Northern Californians, San Francisco is always "The City") and decided that an electric Lotus Elise powered by laptop cells would be a neat thing. Then Elon Musk got involved. Now Tesla rolls world-







class luxury sedans off the line at the old GM plant across the bay in Fremont.

Yet it's Uber that's defining modern car culture, by putting a dent in the way the public actually uses automobiles. San Francisco can't actually use automobiles. San Francisco can necessity and savvy may have birthed Uber, but it's been a runaway smash around the world. It's already drawn fierce and controversial competition in the form of Lyft, and to a lesser extent, Sidecar. Uber has been accused of poaching drivers and spamming the services of its competitors. And it's been more than a thorn in the side of traditional taxicab drivers, an entrenched industry that isn't going down without a fight.

Controversy in California has accompanied two cases. In one, an Uber driver was arrested after reportedly hitting and killing a pedestrian child, while in another, a driver allegedly kidnapped a woman. In both instances, Uber has maintained that since the drivers were not transporting an Uber passenger, they were "off-duty" and the company should bear no responsibility.

Into my second evening, I began to relax. A day in the Phantom had reduced the pucker factor of maneuvering a car designed for the 10-lane driveways of Arabia around a city with some of the most erratic traffic in the nation. Managing the

app had become second nature, the pickups and drop-offs routine. The city itself had become familiar again, and, after years of being uncomfortable with the ways it had changed, I grudgingly embraced it.

It's a hard city not to embrace when you've got a leggy 50-something woman yelling, "A Rolls-Royce Cornish! I can't believe you picked me up in a Rolls-Royce Cornish!" I was too amused to correct her pronunciation of "Corniche" or to inform her that we weren't in one. Besides, I couldn't get more than half a word in edgewise, so I just let her ramble. "I have a lovely home. You should come up and see it. Could I offer you a drink? Or a line? Do you need to use the bathroom?" I passed on the booze. Ditto the coke. I did, however, really have to use the bathroom, and it seemed less sketchy to leave the Phantom in a quiet driveway in the Marina than anywhere else I might find a usable lavatory.

My aging-party-girl fare was decidedly of one of the city's previous iterations. Her association with the Corniche, a car that made its debut in 1971 and has been out of production for nearly two decades, was proof enough of that. At first blush, the techno-libertarian battle cry of the new San Francisco sounds an awful lot like a reductionist version of the anarchist tradition that had held strong in the town since before the time of the Corniche. "Disrupt! Disrupt! Disrupt! We wanna disrupt!" Why? "Because we wanna disrupt!" But it's both more and less nuanced than that. It's a single-minded nihilism with a million grinning tentacles. As in, wouldn't it be great if you could solve the nagging problems of the relatively affluent with just a PayPal account and a smartphone?

With that sort of power at one's fingertips, when does something as complex and mechanical as a Rolls-Royce become just a mere bauble, a token of affluence, rather than a monument to what tech-

## UBER, MAN



The app shows nearby Uber drivers. Enter a destination for a quote.



Uber pairs you with a driver and identifies his or her car.



Uber automatically bills your credit card at the end of the ride.



nology and craftsmanship can achieve? What are a V-12 and a champagne cooler but pale novelties compared with the endless variety of distractions the internet affords?

In the Castro, a blonde and a brunette bounced into the back seat. They were headed for the Marina, just sozzled enough to energetically ham it up all the way up Van Ness. Lauren and Leslie wanted to go to a wine bar. Leslie, fair-haired and sarcastic, was on a quest for champagne. She was upset that the rear console's fridge was not stocked with bubbly, as if this were her ride to the Webbys. Are the Webbys still a thing? "Champers!" she yelled periodically, obviously expecting it to materialize. This stopped being endearing somewhere around Broadway. I found myself half-wishing I'd just shown up in a Prius.

Upon arrival at the wine bar, an impromptu party broke out on the sidewalk as the girls split out of the Roller. Lauren, the brunette, decided to show off her yoga skills. On the hood. People danced. A homeless guy slumped against a storefront window dropped some science about the car and the concern that built it. He'd inject tidbits like "that's a BMW V-12 under the hood!" in between the drunken requests and exhortations of the wine-bar patrons.

In Uber's mind, the company is Doing Good. In the eyes of the cabbies, their lunch is being eaten by a bunch of amateurs not subject to the same taxes and regulations. Most of their resistance has just saddled Uber with inconvenience. In Sacramento, bills are working their way toward the governor's desk that hold ride-sharing drivers to the same background-check, fingerprinting, and insurance standards as cabbies, raising the barrier to entry for drivers. In Britain, Transport for London recently ruled in favor of Uber, concluding that a smartphone is not a taximeter, thus allowing the company to carry on by what seems like a technicality. Las Vegas, by contrast, has managed to keep ride-sharing companies out thus far, thanks to robust local regulations. Inevitably, ride-sharing services will win some battles, while taxi interests will win others. In most places, we imagine the playing field will even out as taxi drivers adopt the newcomers' tech and the ride-sharing companies become entrenched interests themselves.

Of greater immediate concern, at least to us, is that in this brave new convenience-or-death marketplace, nobody seems to care that I am driving something that looks as if Sir Oswald Mosley had hired Albert Speer to design a 21st-century staff car for the British Union of Fascists. In fact, the only other person I encountered who seemed to know anything about the car was the man who brazenly walked up and started washing my windows without permission, regaling



## PHANTOM TOLLBOOTH

**HOURS:** 11

**FARES:** 16

**FARE MILES:** 26.8

**AVERAGE TRIP:** 1.7 MILES

**GROSS REVENUE:** \$155.60

**UBER (20%):** \$31.12

**C/D NET EARNINGS:** \$124.48\*

We feel confident that if we had not been chasing a story, we could have increased the number of rides we gave and earned between \$125 and \$200 per night. Let's split the difference and call it \$163, for the sake of convenience. If we drove 365 nights per year and subtracted \$520 to cover the \$10 weekly Uber phone lease, that would come out to \$58,975, or \$4915 per month. The current national average FICO credit score is 691, which

would be good for a 4.521-percent APR loan. Assuming we could walk into a Rolls-Royce dealership and purchase the \$490,215 car we drove in San Francisco with zero down and 48 months to pay, our Uber earnings would cover 44 percent of the car payment every month. Even if we could take out a 10-year mortgage on the Phantom, we'd still fall short on the payments. Knowing that, we don't even want to calculate our fuel bill, as the Phantom was getting only 9 mpg while deployed as a taxi. Oh, and there's tax, title, and registration costs, too. Plus insurance. So if you're looking to own a Phantom, this is not the way to go. One could reasonably support a Prius habit, however. Still, this experiment has us scheming: Would it be possible to come out ahead on the care and feeding of a nice vintage Silver Shadow, with enough left over to keep the glove box stocked with Grey Poupon?

*\*We donated this money plus our \$100 "first-trip bonus" to Central City Hospitality House, an organization dedicated to helping the homeless in San Francisco's Tenderloin neighborhood.*

me with tales of Rolls-Royces he'd previously encountered. He was a little muddy on the brouhaha that resulted in BMW sauntering off to Goodwood with the double-R, while VW czar Ferdinand Piëch got the Bentley Flying B. No matter, really. The trappings of might have moved on in San Francisco. The traditional forms may be recognizable only to the sub-proles.

Unlike Mark Antony, I didn't come to bury the Caesar of the Peninsula. And if I didn't come to praise it, I at least wanted to take its temperature. There's been too much Travis Bickle-style lamentation on the rise of the tech tribe. Some of it happens to be thought-provoking reading, but a real rain isn't going to come and wash anyone off the street. The fog will roll in, hang for a while, then burn off. That's what happens in San Francisco, which will be something new again, likely something even more expensive next time than it is now. Whether that has anything to do with cars is anybody's guess. There will always be Phantom money in The City, even if fewer and fewer people care what a Phantom actually is. It's just a fancy Uber ride, after all. It's a nice distraction. It's not of consequence. ■



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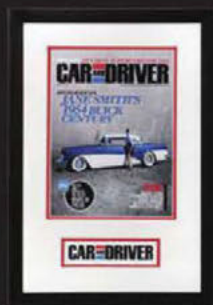
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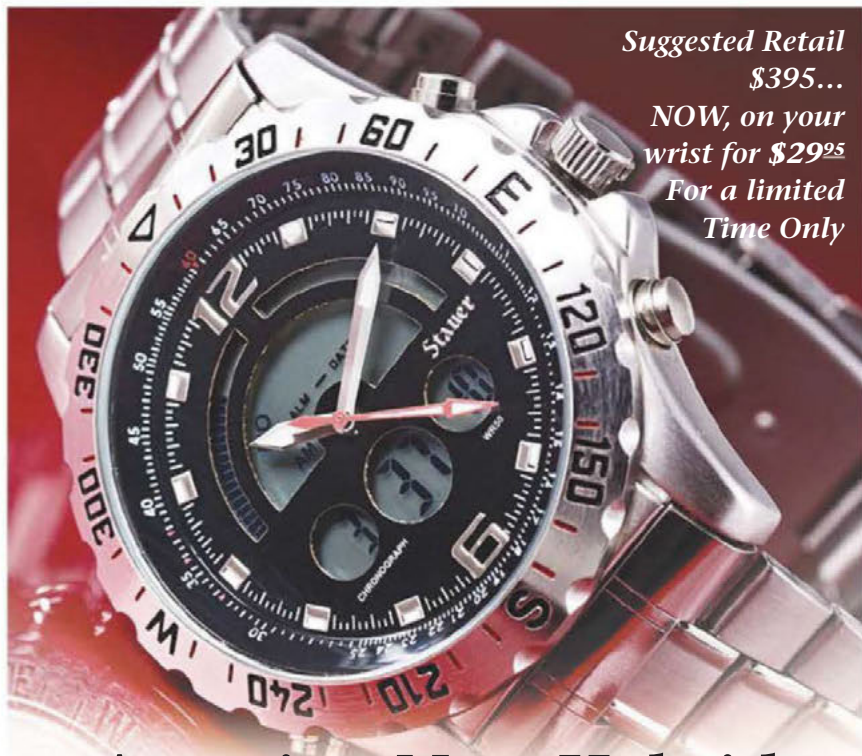
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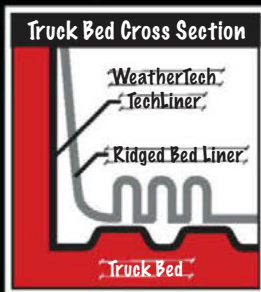
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**Das Auto.**



# LONG-TERM TEST

— 2013 AUDI S7 —

089

# 7th Heaven

THE S7 GRANTS ACCESS  
TO AUTOMOTIVE  
NIRVANA, WHICH IS ALSO  
NOT PERFECT.

by DON SHERMAN  
photography by ROY RITCHIE



A couple of weeks driving any car as gifted as Audi's S7 is never enough. So, after our initial fling earned this five-door hot rod its 2013 10Best award, we signed up for a more meaningful relationship: a 40,000-mile test, ultimately lasting 13 months and traversing more than a dozen states. The joys and woes from our long-term logbook follow.

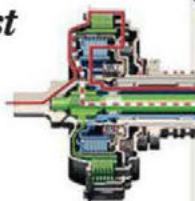
The S7 arrived two years ago as the higher-caliber version of Audi's A7 mid-size coupe/sedan/hatchback (take your pick). This is where the apotheoses of style, comfort, versatility, and driving verve converge. A sturdy aluminum-and-steel uni-body armed with a ballsy twin-turbo V-8, a seven-

speed dual-clutch automatic, and Audi's Quattro four-wheel-drive system give the S7 stellar performance. The air-spring multilink (front and rear) suspensions with variable dampers are tuned for sporting comportment. Audi's "drive select" controller provides four different settings for steering effort, throttle response, transmission shift speed, and shock firmness. Unlike other brands tempting customers with "four-door-coupe" styling, Audi's A7/S7/RS7 interpretation combines a French-curve roofline with easy entry and minimal loss of rear head-, leg-, and shoulder room. Adding the hatch, which many Americans

090

12.2014

caranddriver.com

. *long-term test*

## THREE DIFFS, NO WAITING



CENTER DIFFERENTIAL

foolishly shun, yields an impressive 25 cubic feet of luggage space, 11 more than the Audi A6 sedan's trunk provides.

The fact that S7s are luxuriously furnished with four leather-trimmed seats, a sunroof, navigation, four-zone climate control, and power assists galore didn't stop us from ticking a few option boxes. Adding \$9825 to the \$79,695 base price: \$5900 for a Bang & Olufsen sound system, \$1400 for LED headlights and running lights, \$1075 for Estoril Blue paint, \$500 for carbon interior-trim inlays, \$500 for side assist (radar beams that ease lane-change anxiety), and \$450 for rear-seat and steering-wheel warmers. Heated front buckets are standard.

Our first test of the buttwarming Audi brought home heart-warming performance results: zero to 60 in 4.3 seconds, a governor-limited 152-mph top speed, and 0.88-g cornering grip. That said, the 171-foot 70-to-zero stopping distance was disappointing. Things improved markedly as the car broke in. After 40,000 miles on Pirelli P Zero tires at the end of their service life, this S7 topped the last Mercedes-Benz E63 AMG we tested with a run to 60 in only 3.8 seconds, a 12.3-second quarter-mile, and a more acceptable 159-foot stop from 70 mph.

S7 exterior aesthetics are about perfect in our eyes thanks to the frameless door glass, four exhaust outlets, matte-finished trim in the grille and wheels, and red accents (ID badges on the brake calipers, grille, and decklid). Some of us did long for the optional 20-inch wheels and tires, which would have tacked another \$1000 onto the window sticker. They would also surely have been casualties of Michigan's weather-ravaged roads.

Through the summer months, our long-term Audi was the weapon of choice for one- to four-person road trips. The 420-hp thrust, svelte profile, comfortable seats, and tasteful interior trim drew lavish log-

→ Like a Dodge Omni, the S7 is a hatchback. Like Northern toilet paper, its interior is quilted. Like other Audis, it's beautifully finished.



**Audi's Quattro driveline** has evolved over three decades to maintain traction benefits and dial back weight. But it's still as complex as ever.

In the fifth-generation system fitted to the S7, the front differential is controlled by what Audi calls an "electronic differential lock." This is a conventional open diff aided by a momentary brake snub when one front wheel begins spinning significantly faster than the other.

The Torsen-type center differential provides a 40-percent front, 60-percent rear torque split in normal driving. Depending on traction, up to 80 percent of the available driveline torque can be routed to either axle. This action is automatic without the use of electronic sensors or activators.

At the rear, Audi's sport differential uses overdrive gears to spin the outboard wheel faster than the inboard one to help the S7 turn more aggressively, a strategy commonly called torque vectoring. These gears and the clutch packs that activate them sit astride the differential. An electronic module monitoring lateral acceleration, yaw (turning) rate, steering-wheel position, and all four wheel speeds commands the two clutch packs.

While it's difficult to point a finger at which part of the S7's Quattro system caused the binding we observed during tight turns at parking speeds, we expect Audi engineers are working on a sixth-generation design to rectify that problem.





# 2013 AUDI S7

## SPECIFICATIONS

VEHICLE TYPE: front-engine, 4-wheel-drive, 4-passenger, 5-door wagon

PRICE AS TESTED ..... \$89,520

BASE PRICE ..... \$79,695

ENGINE TYPE: twin-turbocharged and intercooled DOHC 32-valve V-8, aluminum block and heads, direct fuel injection

DISPLACEMENT ..... 244 cu in, 3993 cc

POWER ..... 420 hp @ 6400 rpm

TORQUE ..... 406 lb-ft @ 1400 rpm

TRANSMISSION ..... 7-speed dual-clutch automatic with manual shifting mode

WHEELBASE ..... 114.7 in

LENGTH ..... 195.6 in

WIDTH ..... 75.2 in

HEIGHT ..... 55.9 in

CURB WEIGHT ..... 4459 lb

### WARRANTY

4 years/50,000 miles bumper to bumper

12 years/unlimited miles corrosion protection

4 years/unlimited miles roadside assistance

### MODEL-YEAR CHANGES

2014: minor trim changes

2015: minor trim changes

book praise. The potent driveline accelerated this luxury capsule to illegal cruising speeds with a biz jet's effortlessness. Highway ride motion is serene and directional stability is keen. The vastness of the cargo hold drew kudos, and several of us enjoyed the 400-plus-mile range provided by the 19.8-gallon fuel tank and greater-than-20-mpg highway mileage. Former editor-in-chief Csaba Csere and current copy editor Jennifer Harrington each logged more than 25 mpg on long trips. Overall, we beat the EPA's 20-mpg combined rating by 1 mpg, proof that there is hope for sports sedans with up-to-date engine technology.

As predicted, Michigan's dastardly 2013-2014 winter was spiteful to our S7. Potholes broke a suspension-height sensor and flattened two front tires. Following service stops to fit winter rubber, reset the wheel alignment, and replace the trashed tires, we kept rolling to enjoy this four-wheel-drive, all-weather interceptor.

The jet-aircraft analogy mentioned earlier also applies to the wealth of electronic gear built into the S7's cockpit. Teaming with Google Earth and SiriusXM, Audi provides the most-advanced connectivity we've seen in any car. After the seven-inch screen rises out of the dash, the nav system provides 3-D satellite and aerial views with shockingly accurate real-time traffic reports. Also, 3G internet service can feed Wi-Fi to as many as eight smartphones or laptops. Fairly easy-to-master voice command of the communication and navigation functions is available to summon local weather, traffic, and accommodations info. Up to 50 destinations can be downloaded from Google Maps. If a shower

## C/D TEST RESULTS

### PERFORMANCE

	NEW	40,000
ZERO TO 60 MPH	4.3 sec	3.8 sec
ZERO TO 100 MPH	10.0 sec	9.4 sec
ZERO TO 150 MPH	24.5 sec	23.8 sec
ROLLING START, 5-60 MPH	5.1 sec	4.8 sec
1/4-MILE	12.7 sec @ 113 mph	12.3 sec @ 114 mph

BRAKING, 70-0 MPH	171 ft	159 ft
ROADHOLDING, 300-FT-DIA SKIDPAD	0.88 g	0.91 g
TOP SPEED (GOVERNOR LIMITED)		152 mph
EPA FUEL ECONOMY, CITY/HWY		17/27 mpg
C/D-OBSERVED FUEL ECONOMY		21 mpg
UNSCHEDULED OIL ADDITIONS		0 qt

### OPERATING COSTS (FOR 40,000 MILES)

SERVICE (4 SCHEDULED, 4 UNSCHEDULED)	\$2637
NORMAL WEAR	\$1258
GASOLINE (@ \$3.83 PER GALLON)	\$7295

### NONWARRANTY REPAIRS

Washer-solvent-sensor diagnosis	\$58
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### DAMAGE AND DESTRUCTION

Replaced suspension sensor	\$516
Replaced right-front winter tire, alignment	\$494
Replaced left-front winter tire	\$283

### LIFE EXPECTANCIES (ESTIMATED FROM 40,000-MILE TEST)

TIRES	40,000 miles
FRONT BRAKE PADS	70,000 miles
REAR BRAKE PADS	more than 100,000 miles

### WHAT BITS AND PIECES COST

HEADLAMP	\$2375
ENGINE AIR FILTER	\$31
OIL FILTER	\$41
WHEEL	\$638
TIRE	\$279
WIPER BLADES (LEFT/RIGHT)	\$28/\$28
FRONT BRAKE PADS	\$265

## EIGHT INTO FOUR

### Audi engineered the S7's

EA824 V-8 with half-liter cylinder sizing, a bore smaller than its stroke, and two turbos fed by inboard exhaust ports (commonly known as a "hot-V" design). This V-8 also has direct fuel injection, aluminum block-and-head construction, four valves per cylinder opened by dual overhead camshafts, and variable intake- and exhaust-valve timing.

Cylinder-on-demand technology improves cruising fuel economy. The center two cylinders in one bank and the end cylinders in the other bank work harder while the four others rest, improving instantaneous mileage by up to 10 percent.

Two noise and vibration countermeasures support V-4 operation. Electromagnetic coils in two engine mounts produce opposite-phase forces to counteract shaking. Four

microphones hidden in the headliner listen for unseemly noise, which the S7's stereo system cancels with out-of-phase waves.

The V-4 mode is so smooth that none of our reviewers made note of it in the logbook. The engine must be warmed up and running between 960 and 3500 rpm in an upper gear for cylinder shutdown to occur. The hardworking holes get a break after seven minutes of V-4 operation to prevent overly high temperatures.

Versions of this 4.0-liter V-8 also provide sublime propulsion in Audi S6s, RS7s, A8s, and S8s, plus the Bentley Continental GT V-8 and Flying Spur. For 2015, the little guys (S6, S7, and A8) get 420 or 435 horsepower and 406 or 444 pound-feet of torque, while the high rollers (RS7, S8, and the Bentley boys) enjoy additional torque and 500 or more horsepower.



## RANTS AND RAVES

### JARED GALL

Two paragliders, including motors, fit nicely with the back seats folded. Normally a pickup is required for such a task.

### MIKE SUTTON

The S7 is classy, comfy, and quick. And one of my all-time favorites.

### ANGELA KUJAVA

While I love you dearly, K.C., would you object to a polygamous relationship with this car?

### JEFF SABATINI

The throttle is soft and laggy, and shifting to sport mode doesn't remedy that.

### ERIC TINGWALL

The engine's restrained demeanor disappears when you stomp the throttle and this turbo V-8 wakes from its slumber.

### CSABA CSERE

While I'm not a fan of four-wheel drive for sporting cars, the Quattro system came in handy while passing on two-lane roads in the rain. It was comforting to know that a puddle wouldn't produce a momentary fishtail or a skid.

### JENNIFER HARRINGTON

This thing just floats over road imperfections, but it isn't boaty. And I'll take the 27 mpg I got on a 400-mile trip with this V-8 beast.

### AUSTIN LINDBERG

Too much wind noise and tire slap for my \$90,000. Also, both the MMI connection and Bluetooth refused to play my iTunes files.

### TONY SWAN

Throttle tip-in at low speeds or a standing start can be quite abrupt. It's touchy and requires care to avoid unseemly bounces in everyday traffic.



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## . long-term test

and closet were included, S7 owners would have no need to return home.

There's more. A touchpad lets you scrawl destinations, phone numbers, and radio stations into the infotainment system with an index finger. And a nifty driver-info center between the tach and speedometer delivers trip, temperature, and telephone data without the loss of crucial miles-to-empty and ETA information.

Unfortunately it was not all bliss. Our S7 log also bristled with way too many gripes for any \$90,000 car: excessive wind noise, pavement-slapping sounds over expansion joints, no cool breezes through the seat upholstery, and door handles that can pinch unwary fingers. Several drivers felt the electrically assisted power steering was too heavy, especially on crowned roads where constant guidance is necessary.

↓ A few staffers pined for the optional 20-inch wheels. The rest of us knew that the 19-inchers were plenty big for the real world.

Two items topped everybody's annoyance list: a binding sensation during full-steering-lock parking maneuvers, and a distinct lack of coordination between throttle commands and engine and transmission actions. In response to these complaints, our local service provider deemed such character flaws normal and unfixable. The binding was a minor irritation, but the lazy throttle, lurching during around-town up- and downshifts, and the occasionally rowdy rollout from rest are unacceptable. Blame most of those foibles on the dual-clutch automatic, a technology that some manufacturers hesitate to employ because of how difficult it is to perfect its all-around behavior.

At least we suffered no reliability issues. There were four scheduled service stops—the first was free—costing \$2637. (The smart alternative is an \$880 Audi Care package that covers all service through 45,000 miles.) Two extra stops were prompted by a fuel-line recall and faulty windshield-washer-fluid-level sensor. Given this car's complexity and performance, the service fees and stops were reasonable.

At the end of the day, we still love the Audi S7, warts and all. It's like the child who's a soccer star, a piano prodigy, and an A student in every class—except social studies. If he were perfect, wouldn't he be more annoying? 🇧🇪





★ FLEET FILES



▲ **2014 PORSCHE CAYMAN S**  
**3915 MILES**  
**22 OBSERVED MPG**

We like to chastise Porsche for its hyper-expensive, insanely optioned test cars. Well, with the arrival of our 2014 Cayman S long-termer, we finally got a chance to see how sensible we could be once we had command of the order sheet. How'd we do? \$72,545. Not bad compared with the six-figure Caymans that Porsche usually specs for the press. Ours is fitted with sport seats, sport exhaust, a torque-vectoring differential, and not much else. How does a dose of our own medicine taste? Pretty darn good. We'll let you know if we regret not getting the leather-covered HVAC vents.



▲ **2015 SUBARU WRX**  
**4603 MILES**  
**25 OBSERVED MPG**

With the novelty wearing off the rear-wheel-drive BRZ, we're back to regularly scheduled Subaru sports-car programming of turbochargers and four-wheel drive. Our \$31,290 WRX in Premium trim has but a single option: the combined navigation system and nine-speaker Harman/Kardon stereo. Naturally, we shunned the CVT automatic in favor of the six-speed manual—all the better for launching the car. With the 1000-mile break-in behind us, we've spun the engine to its 6700-rpm redline and dumped the clutch to produce a 5.0-second zero-to-60 blitz and 13.7-second quarter-mile run.

# Meet the Beauty in the Beast

*Discover this spectacular 6½-carat green treasure from Mount St. Helens!*

For almost a hundred years it lay dormant. Silently building strength. At 10,000 feet high, it was truly a sleeping giant. Until May 18, 1980, when the beast awoke with violent force and revealed its greatest secret. Mount St. Helens erupted, sending up a 80,000-foot column of ash and smoke. From that chaos, something beautiful emerged... our spectacular *Helenite Necklace*.

Helenite is produced from the heated volcanic rock of Mount St. Helens and the brilliant green creation has captured the eye of jewelry designers worldwide. Today you can wear this massive 6½-carat stunner for **only \$149!**

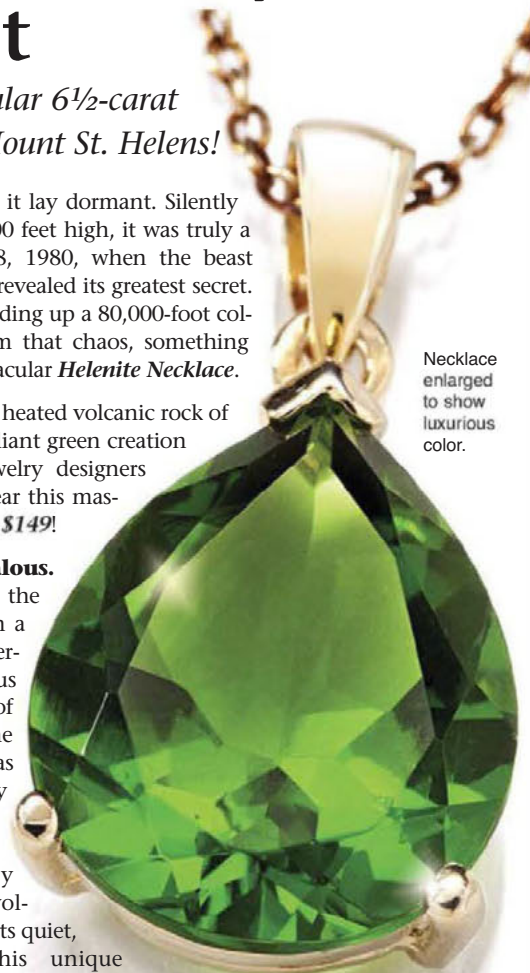
**Make your emeralds jealous.**

Our *Helenite Necklace* puts the green stone center stage, with a faceted pear-cut set in .925 sterling silver finished in luxurious gold. The explosive origins of the stone are echoed in the flashes of light that radiate as the piece swings gracefully from its 18" luxurious gold-finished sterling silver chain.

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# road-test digest

## HIGHLIGHTS

### MOST EXPENSIVE

Porsche 918 Spyder **\$875,175**

### LEAST EXPENSIVE

Nissan Versa Note S **\$14,800**

### HIGHEST TOP SPEED

Lamborghini Aventador **217 mph\***

### LOWEST TOP SPEED

Smart Fortwo ED Cabriolet **78 mph**

### QUICKEST 0-60 MPH

Porsche 918 Spyder **2.2 sec**

### SLOWEST 0-60 MPH

Chevrolet Spark **11.2 sec**

### QUICKEST 1/4-MILE

Porsche 918 Spyder **9.8 sec**

### SLOWEST 1/4-MILE

Chevrolet Spark **18.3 sec**

### SHORTEST STOPPING DISTANCE

Porsche 911 GT3 **135 feet**

### LONGEST STOPPING DISTANCE

GMC Sierra 2500HD Denali 4x4 **217 feet**

### MOST GRIP

Porsche 911 GT3 **1.12 g**

### LEAST GRIP

Mercedes-Benz G550 **0.64 g**

### BEST FUEL ECONOMY

BMW i3 **137/111 city/hwy MPG**

### WORST FUEL ECONOMY

Lexus LFA **11/16 city/hwy mpg**

**ACCELERATION:** Elapsed times from zero to 60 mph and through a quarter-mile distance. Tests are run in two directions and corrected to standard atmospheric conditions. The test vehicle is loaded with driver, full tank of fuel, and about 10 pounds of test equipment. To take full advantage of the power and traction available in manual-transmission cars, combinations of wheelspin or clutch slip—or both—are used. All upshifts are lift-throttle with the clutch disengaged, and the engine's redline is not exceeded. With automatic-transmission cars, brake torqueing is used to produce the best results and alternative shift points are investigated. Performance is measured using Racelogic VBOX GPS-based equipment.

**TOP SPEED:** Maximum speed achieved without exceeding the engine's redline. The published figure is an average of two top-speed runs in opposite directions to cancel the effects of wind and grade.

**BRAKING, 70-0 MPH:** We report the second-shortest stopping distance from 70 mph from a total of six stops. Speed and distance are measured using the VBOX, triggered by a pressure switch on the brake pedal so that the vehicle's response characteristics are reflected in the results.

**ROADHOLDING:** The maximum lateral acceleration possible during cornering. The published figure is the average of one complete lap in each direction around a 200- or 300-foot-diameter skidpad.

**EPA ESTIMATED CITY/HIGHWAY FUEL ECONOMY:** The fuel consumption measured in government laboratory tests.

MODEL (MONTH TESTED)	PRICE AS TESTED \$	0-60/1/4-MILE sec	TOP SPEED mph	BRAKING 70-0 MPH feet	ROAD-HOLDING g	EPA CITY/HWY mpg
ACURA MDX (9/13)	57,400	6.4/14.9	114	178	0.85	18/27
ALFA ROMEO 4C (11/14)	68,495	4.1/12.8	159	144	1.00	24/34
ASTON MARTIN VANQUISH (7/13)	303,635	4.1/12.3	183	155	0.95	13/19
AUDI ALLROAD QUATTRO (6/14)	48,745	6.3/14.9	128	161	0.87	20/27
AUDI A3 QUATTRO (6/14)	39,845	5.4/14.0	129	156	0.94	24/33
AUDI A3 1.8T (11/14)	36,645	6.5/15.2	129	162	0.92	23/33
AUDI A4 2.0T QUATTRO (5/12)	43,075	5.6/14.4	128	166	0.88	21/29
AUDI A6 3.0T (12/13)	62,745	5.6/14.0	129	171	0.88	18/27
AUDI A7 TDI (2/14)	81,395	6.0/14.6	130	154	0.92	24/38
AUDI A8L 4.0T (5/13)	107,645	3.9/12.4	131	169	0.86	16/26
AUDI RS5 (11/12)	77,320	4.4/12.8	178	158	0.96	16/23
AUDI R8 V-10 PLUS (7/13)	191,445	3.2/11.4	197*	148	0.96	13/22
AUDI S3 (9/14)	41,995*	4.4/12.9	155*	160	-	23/31
AUDI S5 (4/14)	59,220	4.6/13.2	155	163	0.95	17/26
AUDI S6 (7/12)	79,000*	3.7/12.1	155*	157	0.87	17/27
AUDI S8 (4/13)	125,995	3.6/11.9	155	156	0.90	15/26
BENTLEY CONTINENTAL GTC V-8 (12/12)	225,740	4.2/12.7	187	175	0.85	14/24
BMW i3 (9/14)	51,175	6.5/15.3	92	163	0.78	137/111†
BMW i8 (8/14)	136,625	3.8/12.4	155	161	0.93	28/29
BMW M3 (9/14)	84,650	4.1/12.4	163	154	0.98	17/26
BMW M4 (8/14)	80,325	3.9/12.1	155*	151	0.98	17/24
BMW M5 MANUAL (4/13)	100,795	4.0/12.1	160	158	0.93	15/22
BMW M6 GRAN COUPE (10/13)	145,155	3.5/11.7	190*	144	-	14/20
BMW X1 xDRIVE28i (1/13)	45,095	6.2/14.9	130	189	0.82	22/33
BMW X3 xDRIVE28i (3/13)	52,345	6.2/14.8	127	180	0.86	21/28
BMW 228i (6/14)	38,225	4.9/13.7	153	161	0.86	23/36
BMW 320i (10/13)	34,775	6.5/15.1	155	163	0.87	24/36
BMW 328i xDRIVE SPORTS WAGON (6/14)	47,775	5.8/14.3	128	165	0.86	22/33
BMW 335i (6/13)	51,545	4.6/13.3	155	164	0.89	23/33
BMW 428i (2/14)	47,125	5.3/14.1	158	164	0.89	23/35
BMW 435i (4/14)	57,225	5.2/13.7	155	170	0.90	20/30
BMW 535i xDRIVE (12/13)	67,600	5.3/13.9	127	172	0.86	20/29
BMW 650i xDRIVE GRAN COUPE (7/13)	115,045	4.6/12.9	146	162	0.93	16/24
BUICK ENCORE (4/13)	31,530	9.3/17.1	116	175	0.82	25/33
BUICK VERANO TURBO (2/13)	30,485	6.4/15.2	130	178	0.84	20/31
CADILLAC ATS 3.6 (6/13)	49,185	5.6/14.2	152	163	0.91	19/28
CADILLAC CTS VSPORT (11/13)	60,095	4.4/12.9	172*	149	0.97	16/24
CADILLAC CTS 2.0T (2/14)	65,125	6.2/14.8	133	164	0.83	20/30
CADILLAC ELR (2/14)	82,135	8.1/16.5	107	173	0.84	32/38*
CHEVROLET CAMARO ZL1 CONVERTIBLE (10/12)	62,245	4.4/12.7	161	150	0.97	14/19
CHEVROLET CAMARO Z/28 (5/14)	76,150	4.4/12.7	172*	155	-	14/19
CHEVROLET CORVETTE STINGRAY (11/13)	68,375	4.0/12.5	190*	142	1.03	17/29
CHEVROLET CORVETTE STINGRAY CONV. (6/14)	76,725	3.7/12.1	185*	141	1.00	16/28
CHEVROLET CRUZE 2.0TD (9/13)	25,810	8.0/16.3	125	180	0.81	27/46
CHEVROLET IMPALA LT 2.5 (11/13)	34,795	8.7/16.8	132	168	0.84	21/31
CHEVROLET SILVERADO 1500 LTZ Z71 4X4 (9/13)	50,755	6.7/15.3	99	178	0.77	16/22
CHEVROLET SONIC RS (7/13)	20,995	8.1/16.3	124	163	0.84	27/34
CHEVROLET SPARK (8/13)	15,895	11.2/18.3	109	176	0.79	32/38
CHEVROLET SPARK EV (3/14)	27,820	7.9/16.3	90	173	0.79	128/109†
CHEVROLET SS (1/14)	45,770	4.5/12.9	160	153	0.95	14/21
CHEVROLET TAHOE LTZ 4WD (6/14)	70,085	7.1/15.6	113	176	0.76	16/22
CHEVROLET VOLT (10/12)	43,950	9.1/17.0	101	185	0.79	35/40
CHRYSLER 200S V-6 AWD (9/14)	32,775	6.0/14.5	121	186	0.80	18/29
CHRYSLER 300S (7/13)	37,925	6.5/15.1	121	175	0.83	19/31
DODGE CHALLENGER SXT (11/14)	37,255	6.2/14.7	119	162	0.86	19/30
DODGE CHARGER SRT8 (1/14)	55,150	4.2/12.6	178	152	0.90	14/23
FERRARI 458 ITALIA (9/11)	332,032	3.0/11.0	210*	146	1.01	12/18
FIAT 500 ABARTH (7/14)	25,995	7.0/15.7	129	195	0.82	28/34
FIAT 500E (3/14)	33,095	8.7/16.8	86	175	0.77	122/108†
FIAT 500L LOUNGE (2/14)	28,245	8.9/16.9	126	169	0.82	24/33
FORD C-MAX ENERGI (3/13)	35,440	7.9/16.1	104	187	0.75	44/41
FORD ESCAPE SEL 4WD (9/12)	33,630	9.1/16.9	117	174	0.81	22/30
FORD FIESTA ST (7/14)	25,390	6.7/15.1	143	172	0.87	26/35
FORD FOCUS ELECTRIC (3/14)	36,990	10.1/17.9	85	185	0.78	110/99†
FORD FOCUS SE (12/13)	22,550	7.5/16.2	121	182	0.83	26/36
FORD FOCUS ST (12/12)	28,170	6.3/14.8	148	164	0.93	23/32
FORD FUSION ENERGI TITANIUM (8/13)	42,285	8.6/16.6	104	185	0.80	44/41
FORD FUSION SE ECOBOOST (11/12)	29,180	8.3/16.4	122	175	0.87	25/37
FORD F-150 LARIAT 4X4 ECOBOOST SPRCRW (9/13)	49,725	6.2/14.8	101	189	0.72	15/21
FORD MUSTANG ECOBOOST (11/14)	37,660	5.2/13.9	149	150	0.96	21/32
FORD SHELBY GT500 (8/12)	63,080	3.5/11.8	189	155	1.00	15/24
GMC SIERRA 2500HD DENALI 4X4 CREW CAB (8/14)	64,630	7.4/15.9	97	217	0.71	-
HONDA ACCORD EX-L (6/13)	30,785	7.4/15.9	127	180	0.86	27/36
HONDA ACCORD EX-L V-6 COUPE (4/13)	33,140	5.5/14.1	125	169	0.86	21/32
HONDA ACCORD HYBRID (1/14)	32,695	7.2/15.7	114	184	0.80	50/45
HONDA CIVIC EX-L (6/14)	23,530	8.8/17.0	125	165	0.85	30/39
HONDA CIVIC HYBRID (1/12)	27,520	10.1/17.7	112	196	0.77	44/44
HONDA FIT EV (3/14)	37,415	8.5/16.7	91	188	0.79	132/105†
HONDA FIT EX (7/14)	18,225	8.0/16.2	118	178	0.79	29/37
HYUNDAI AZERA (7/13)	37,290	6.2/14.9	155	173	0.80	20/29
HYUNDAI GENESIS 2.0T R-SPEC COUPE (7/12)	27,375	5.9/14.4	151	163	0.91	21/30
HYUNDAI GENESIS 5.0 (9/14)	55,700	5.0/13.6	145	167	0.86	15/23
HYUNDAI SANTA FE SPORT (2/13)	32,175	8.6/16.6	120	177	0.75	21/29
HYUNDAI SONATA SPORT 2.0T (9/14)	34,335	8.0/16.3	140*	178	0.80	23/32
HYUNDAI TUCSON LIMITED AWD (9/12)	27,420	8.8/17.0	110	180	0.77	21/28



**MODEL (MONTH TESTED)**

	PRICE AS TESTED \$	0-60/1/4-MILE sec	TOP SPEED mph	BRAKING 70-0 MPH feet	ROAD-HOLDING g	EPA CITY/HWY mpg
HYUNDAI VELOSTER (2/12)	23,310	9.1/17.0	121	176	0.83	29/38
INFINITI JX35 AWD (7/12)	54,800	7.8/16.0	121	181	0.76	18/23
INFINITI Q50S HYBRID (10/13)	53,655	5.1/13.8	149	180	0.87	28/34
INFINITI Q50S 3.7 (7/14)	50,955	4.9/13.5	144	156	0.95	20/29
JAGUAR F-TYPE R COUPE (11/14)	103,425	3.5/11.8	188	151	1.00	16/23
JAGUAR F-TYPE V-8 S (6/14)	100,370	3.7/12.0	171	147	0.96	16/23
JAGUAR XF 2.0T (3/13)	68,175	6.8/15.1	149	161	0.85	19/30
JAGUAR XJ 3.0 (1/13)	84,725	5.2/13.8	125	158	0.85	18/28
JAGUAR XKR-S CONVERTIBLE (5/13)	138,875	4.0/12.3	186*	156	0.92	15/22
JEEP CHEROKEE LIMITED 4X4 (4/14)	37,525	6.9/15.3	119	166	0.79	19/27
JEEP GRAND CHEROKEE ECODIESEL 4X4 (6/13)	56,990	8.0/16.1	119	184	0.72	21/28
JEEP WRANGLER WILLIS (7/14)	30,980	6.6/15.3	99	210	0.60	17/21
KIA CADENZA (7/13)	41,900	6.2/14.8	154	186	0.81	19/28
KIA FORTE EX (6/14)	20,300	7.3/15.6	138	160	0.86	24/36
KIA SORENTO SX V-6 AWD (5/13)	38,550	7.0/15.6	120	177	0.75	18/24
KIA SOUL! (2/14)	26,195	8.1/16.4	117	162	0.82	23/31
KIA SPORTAGE EX AWD (9/12)	30,150	9.3/17.3	110	179	0.79	21/28
LAMBORGHINI AVENTADOR LP700-4 (1/12)	412,015	3.0/10.9	217*	144	0.95	11/17
LAMBORGHINI HURACAN LP610-4 (9/14)	256,745*	2.5/10.4	202*	144	1.01	14/20
LAND ROVER RANGE ROVER EVOQUE (3/13)	56,795	6.6/15.1	133	165	0.83	20/28
LAND ROVER RANGE ROVER SPORT SUPERCHGD (4/14)	88,585	4.6/13.1	133	167	0.86	14/19
LAND ROVER RANGE ROVER SUPERCHARGED (8/13)	114,930	4.7/13.1	136	174	0.75	13/19
LEXUS IS350 F SPORT (6/13)	49,000*	5.6/14.0	143*	177	0.85	19/28
LEXUS LFA (12/10)	375,875	3.6/11.7	202*	164	0.98	11/16
LEXUS LS460L AWD (2/11)	98,330	6.0/14.5	130	171	0.80	16/23
LINCOLN MKZ 2.0H (9/13)	42,415	9.4/17.2	109	170	0.83	45/45
MASERATI GHIBLI S Q4 (5/14)	100,140	4.7/13.4	175	155	0.91	15/25
MAZDA CX-5 GRAND TOURING AWD (6/13)	31,890	7.6/15.8	123	166	0.81	24/30
MAZDA 3 i TOURING (6/14)	23,235	7.6/15.9	133	167	0.82	30/41
MAZDA 6 GRAND TOURING (6/13)	31,490	7.0/15.6	135	174	0.86	26/38
MCLAREN MP4-12C (9/11)	303,690*	2.9/10.7	205*	145	1.02	15/22
MERCEDES-BENZ B-CLASS ELECTRIC DRIVE (9/14)	50,710	6.8/15.4	101	188	0.75	85/83*
MERCEDES-BENZ CLA250 (12/13)	35,855	6.3/14.9	133	160	0.90	26/38
MERCEDES-BENZ CLS63 AMG S-MODEL (10/13)	125,285	3.2/11.6	186*	148	-	16/22
MERCEDES-BENZ C63 AMG EDITION 507 (3/14)	75,125	3.9/12.3	176	156	0.90	13/19
MERCEDES-BENZ C400 4MATIC (11/14)	61,755	4.7/13.3	136	160	0.88	21/29
MERCEDES-BENZ E350 (12/13)	63,490	6.0/14.6	133	175	0.83	21/30
MERCEDES-BENZ GLK250 BLUETEC (10/13)	50,995	8.1/16.2	129	185	0.80	24/33
MERCEDES-BENZ GL63 AMG (2/13)	130,000*	4.8/13.2	156	162	0.84	13/17
MERCEDES-BENZ G550 (10/12)	108,850	5.9/14.6	133	185	0.64	12/15
MERCEDES-BENZ SLS AMG BLACK (1/14)	296,950	3.2/11.2	196*	151	0.98	13/17
MERCEDES-BENZ SL65 AMG (7/13)	223,465	3.7/11.8	186	152	0.96	14/21
MERCEDES-BENZ S63 AMG 4MATIC (8/14)	168,285	3.8/12.2	187	155	0.93	15/23
MERCEDES-BENZ S550 (11/13)	113,815	4.9/13.4	132	171	0.87	17/25
MINI COOPER JOHN COOPER WORKS (6/12)	32,600	6.1/14.5	147	164	0.89	25/33
MINI COOPER S CONVERTIBLE (4/13)	34,350	6.7/15.1	140	154	0.90	27/35
MINI COOPER S HARDTOP (7/14)	27,595	6.8/15.1	146*	191	0.84	25/38
MINI COOPER S (11/14)	16,890	10.9/18.3	102	184	0.74	37/44
MITSUBISHI MIRAGE ES (4/14)	73,396	6.9/15.5	100	207	0.74	-
MORGAN 3 WHEELER (7/14)	151,880	2.9/11.2	191	145	1.02	16/23
NISSAN GT-R NISMO (8/14)	24,415	7.3/15.8	123	176	0.85	25/30
NISSAN JUKE SV AWD (4/12)	36,910	10.2/17.7	94	180	0.80	129/102†
NISSAN LEAF SL (3/14)	23,420	9.2/17.2	118	172	0.81	30/39
NISSAN SENTRA SL 1.8 (12/12)	14,800	9.5/17.2	114	181	0.76	27/36
NISSAN VERSA NOTE S (1/14)	66,100	5.6/14.0	168	145	1.01	20/30
PORSCHE BOXSTER (12/12)	85,410	4.4/12.9	176	147	0.99	20/28
PORSCHE BOXSTER S (9/12)	137,195	5.5/13.9	156	151	0.95	15/21
PORSCHE CAYENNE GTS (4/13)	70,345	5.3/13.9	165	148	1.03	21/30
PORSCHE CAYMAN (11/14)	93,530	4.1/12.6	173	146	0.99	21/30
PORSCHE CAYMAN S (8/13)	92,140	4.2/12.7	182	144	0.98	19/27
PORSCHE 911 CARRERA (8/14)	148,245	4.0/12.4	188*	147	1.06	19/27
PORSCHE 911 CARRERA S (11/13)	136,430	4.3/12.7	187*	149	1.03	19/27
PORSCHE 911 CARRERA S CABRIOLET (5/13)	142,265	3.0/11.2	195*	135	1.12	15/20
PORSCHE 911 GT3 (11/13)	193,740	2.6/10.8	198*	144	1.09	17/24
PORSCHE 911 TURBO S (5/14)	875,175	2.2/9.8	214*	142	1.10	20/24
PORSCHE 918 SPYDER (8/14)	59,780	8.4/16.5	99	211	0.67	-
RAM 2500 POWER WAGON LARAMIE 4X4 (9/14)	25,092	6.4/14.9	136	166	0.96	23/30
SCION FR-S (10/12)	30,040	9.8/17.5	78	190	0.76	122/93†
SMART FORTWO ED CABRIOLET (3/14)	140,990	3.2/11.5	206*	146	1.02	12/19
SRT VIPER GTS (2/13)	28,000*	6.3/14.9	139	165	0.91	22/30
SUBARU BRZ LIMITED (6/12)	33,220	8.6/16.7	122	166	0.78	24/32
SUBARU FORESTER 2.5i TOURING (6/13)	29,290	5.1/13.8	144	159	0.92	21/28
SUBARU WRX (9/14)	109,600	4.6/13.3	134	160	0.91	88/90†
TESLA MODEL S SIGNATURE PERFORMANCE (1/13)	36,549	6.1/14.5	127	178	0.82	21/31
TOYOTA AVALON XLE (7/13)	22,870	9.5/17.4	111	180	0.82	29/37
TOYOTA COROLLA S (6/14)	27,565	8.2/16.5	123	168	0.78	22/29
TOYOTA RAV4 XLE AWD (6/13)	30,850	6.0/14.8	127	165	0.89	21/30
VOLKSWAGEN BEETLE GSR (4/14)	26,775	7.7/15.9	124	173	0.85	26/37
VOLKSWAGEN GOLF TSI (11/14)	28,305	5.8/14.4	124	163	0.91	25/34
VOLKSWAGEN GTI (9/14)	22,635	7.3/15.5	126	166	0.86	25/36
VOLKSWAGEN JETTA SE (6/14)	27,850	8.0/16.2	124	175	0.81	30/42
VOLKSWAGEN JETTA TDI (9/13)	28,790	8.6/16.8	113	178	0.82	30/40
VOLKSWAGEN PASSAT TDI (11/11)	60,840	6.9/15.4	125	183	0.85	20/29
VOLKSWAGEN TOUAREG TDI (6/13)	47,925	5.4/14.0	131	193	0.86	24/35
VOLVO S60 T6 DRIVE+ (9/14)	50,475	5.0/13.6	132	177	0.84	19/28

\*ESTIMATED †MPGe

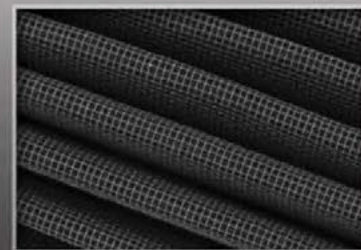
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b. Paid Circulation (by Mail and Outside the Mail)		
(1) Mailed Outside-County Paid Subscriptions Stated on PS Form 3541 (include paid distribution above nominal rate, advertiser's proof copies, and exchange copies)	868,887	857,225
(2) Mailed In-County Paid Subscriptions Stated on PS Form 3541 (include paid distribution above nominal rate, advertiser's proof copies, and exchange copies)	n/a	n/a
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c. Total Paid Distribution (Sum of 15b (1), (2), (3), and (4))	926,623	933,125
d. Free or Nominal Rate Distribution (By Mail and Outside the Mail)		
(1) Free or Nominal Rate Outside- County Copies included on PS Form 3541	229,316	226,275
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e. Total Free or Nominal Rate Distribution (Sum of 15d (1), (2), (3), and (4))	235,448	230,425
f. Total Distribution (Sum of 15c and 15e)	1,162,071	1,163,550
g. Copies not Distributed	159,835	150,308
h. Total (Sum of 15f and 15g)	1,321,906	1,313,858
i. Percent Paid ((15c divided by 15f) times 100)	79.7%	80.2%
16a. Requested and Paid Electronic Copies	52,766	65,900
b. Total Requested and Paid Print Copies and Requested/Paid Electronic Copies (Line 15c)	979,389	999,025
c. Total Requested Copy Distribution (Line 15f) and Requested/Paid Electronic Copies	1,214,837	1,229,450
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17. Publication of Statement of Ownership. Publication of this statement is required. Will be printed in the December 2014 issue of this publication.

18. Signature and Title of Editor, Publisher, Business Manager, or Owner: Publisher, Felix DiFilippo

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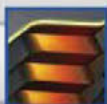
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*Studless Ice & Snow*

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**Asymmetric tread pattern** blends dry road handling with foul-weather traction.

**Low-void outboard shoulder blocks** tied together by elevated lateral grooves increase dry road steering response and stability.

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### Install ExtremeWinterContact in sets of four only.

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ExtremeWinterContact tires meet the industry's severe snow service requirements and are branded with the mountain/snowflake symbol.



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All New  
for Winter 2014

MONTE  
TITANO



**MT1 PIANA**  
16 17 18



**MT2 PARI**  
16 17 18



**MT4 CESTA**  
17 18 19



**MT3 SOPRA**  
16 17 18

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**O.Z. ALLEGGERITA HLT**  
16 17 18  
STARTING AT \$259ea.



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**ANDROS N1**  
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**ANDROS N3**  
14 15 16 17 18  
STARTING AT \$96ea.



**ANDROS R1**  
17 18  
STARTING AT \$139ea.



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17 18  
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**RIAL W10X**  
18 20  
STARTING AT \$189ea.



**ENKEI PERF. M52**  
15 16 17 18  
STARTING AT \$120ea.



**ENKEI PERF. RSF5**  
15 16 17 18  
STARTING AT \$113ea.



**ENKEI TUNING KOJIN**  
17 18  
STARTING AT \$195ea.



**ENKEI TUNING RAJIN**  
18  
STARTING AT \$215ea.



**ENKEI TUNING T6S**  
17 18  
STARTING AT \$195ea.



**ASA AR1**  
16 17 18  
STARTING AT \$120ea.



**ASA GT8**  
17 18 19  
STARTING AT \$161ea.



**AVARUS AV11**  
20 21  
STARTING AT \$232ea.



**AVARUS AV12**  
17 18 19 20  
STARTING AT \$169ea.



**SPORT EDITION A8**  
15 16 17 18  
STARTING AT \$59ea.



**SPARCO ASSETTO GARA**  
15 16 17 18  
STARTING AT \$99ea.



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17 18  
STARTING AT \$148ea.



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### What About TPMS?

If your vehicle came equipped with a direct tire pressure monitoring system, we can assist you in selecting wheels that are compatible with its sensors. We also offer an extra set of sensors for all TPMS systems, so your tire and wheel package can arrive with sensors already installed.



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# WINTER TIRES



DUNLOP  
WINTER MAXX



FIRESTONE  
WINTERFORCE



GENERAL  
ALTIMAX  
ARCTIC



GOODYEAR  
ULTRA GRIP  
ICE WRT



BRIDGESTONE  
BLIZZAK DM-V1



BRIDGESTONE  
BLIZZAK LM-32



BRIDGESTONE  
BLIZZAK WS80



CONTINENTAL  
EXTREMEWINTER  
CONTACT



DUNLOP  
SP WINTER  
SPORT 4D

Many winter tires have limited availability. Order now for best selection!

## BRIDGESTONE

### Blizzak WS80

175/65 R-15	\$86	225/60 R-16	\$117	235/55 R-17	\$150
185/65 R-15	91	225/65 R-16	113	235/60 R-17	132
185/60 R-15	94	235/65 R-16	122	235/65 R-17	129
185/65 R-15	89	235/40 R-17	135	245/45 R-17	179
195/65 R-15	94	255/40 R-17	140	255/55 R-18	170
205/65 R-15	99	215/45 R-17	147	235/60 R-16	129
215/70 R-15	99	215/55 R-17	160	235/70 R-16	132
185/65 R-16	114	215/55 R-17	132	225/50 R-18	170
195/65 R-16	125	215/60 R-17	122	225/55 R-18	177
195/60 R-16	100	215/65 R-17	121	225/60 R-18	153
205/65 R-16	123	225/45 R-17	159	235/40 R-18	193
205/60 R-16	105	225/50 R-17	163	235/50 R-18	178
205/65 R-16	106	225/55 R-17	136	245/40 R-19	194
215/65 R-16	128	225/60 R-17	124	245/50 R-19	185
215/60 R-16	110	225/65 R-17	127	255/35 R-18	201
215/65 R-16	108	235/45 R-17	175		

### Blizzak WS70

185/60 R-15	\$71	185/55 R-16	\$94	225/65 R-16	\$90
185/65 R-15	70	205/55 R-16	99	235/65 R-16	95
195/60 R-15	89	205/60 R-16	83	225/50 R-17	132
195/65 R-15	77	215/60 R-16	90	245/45 R-17	142
205/65 R-15	80	215/65 R-16	88		
215/70 R-15	79	225/60 R-16	92		

### Blizzak LM-32

205/55 R-16	\$131	255/45 R-18	\$233	275/40 R-19	\$305
215/45 R-17	162	275/35 R-18	264	245/40 R-20	349
225/45 R-17	168	275/40 R-18	243	245/45 R-20	292
235/45 R-17	175	275/45 R-18	231	245/50 R-20	317
215/45 R-18	203	245/40 R-19	263	255/40 R-20	435
225/40 R-18	193	245/45 R-19	255		
225/50 R-18	210	255/35 R-19	286		
235/40 R-18	200	255/40 R-19	274		
245/45 R-18	226	255/45 R-19	311		
255/40 R-18	217	275/35 R-19	321		

### Blizzak LM-25 RFT (Runflat)

205/50 R-17	\$187	245/50 R-17	\$240	255/40 R-20	\$405
225/45 R-17	214	245/45 R-18	297	285/35 R-20	460

### Blizzak LM-500

155/70 R-19	\$129	225/60 R-17	\$139		
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### Blizzak LM-60

245/40 R-17	\$191	175/65 R-14	\$89	235/55 R-17	\$179
265/35 R-18	159	185/65 R-14	94	235/50 R-18	228
225/40 R-19	179	145/65 R-15	76	255/30 R-19	263
265/35 R-19	224	205/60 R-15	91		
275/45 R-19	225	185/55 R-16	93		
255/50 R-20	281	225/55 R-16	124		

### RFT (Runflat)

195/55 R-16	\$157	235/60 R-16	120		
205/45 R-17	180				
225/40 R-18	240				
235/55 R-18	257				
255/55 R-18	287				

### Blizzak WS60

175/65 R-14	\$89	235/55 R-17	\$179		
185/65 R-14	94	235/50 R-18	228		
145/65 R-15	76	255/30 R-19	263		
205/60 R-15	91				
185/55 R-16	93				
225/55 R-16	124				
235/60 R-16	120				

### Blizzak LM-32s

235/45 R-17	\$183				
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### Blizzak LM-80

235/55 R-17	\$179				
235/50 R-18	228				
255/30 R-19	263				
225/65 R-17	\$171				

### RFT (Runflat)

225/65 R-17	\$171				
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### Blizzak DM-Z3

265/45 R-21	\$299				
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## BRIDGESTONE

### Blizzak DM-V1

215/70 R-15	\$106	255/60 R-17	\$159	285/60 R-18	\$191
215/70 R-16	115	255/65 R-17	152	225/65 R-19	151
215/70 R-16	121	225/70 R-17	137	235/65 R-19	167
225/70 R-16	122	235/75 R-17	147	245/65 R-19	164
225/75 R-16	115	265/65 R-17	157	255/65 R-19	169
235/60 R-16	129	265/70 R-17	153	255/60 R-20	192
235/70 R-16	132	265/75 R-17	168	255/50 R-20	183
245/70 R-16	132	235/65 R-18	154	255/45 R-20	207
245/75 R-16	126	235/70 R-18	152	255/40 R-20	218
245/70 R-16	146	255/60 R-19	157	255/35 R-20	229
215/70 R-17	127	255/65 R-19	161	255/30 R-20	241
225/65 R-17	125	255/70 R-19	169	255/25 R-20	253
245/65 R-17	130	255/75 R-19	174	255/20 R-20	265
245/70 R-17	136	255/80 R-19	174		
245/75 R-17	144	255/85 R-19	181		
245/70 R-17	132	255/90 R-19	180		
245/75 R-17	141	255/95 R-19	183		
		255/100 R-19	184		

### Blizzak WS65

U215/95 R-16	\$155	U245/75 R-16	\$167	U245/70 R-17	\$182
U225/75 R-16	155	U265/75 R-16	172		
U235/75 R-16	175	U285/75 R-16	182		

## GENERAL TIRE

### Altimax Arctic (studdable \$15/tire)

175/70 R-13	\$49	205/55 R-16	\$85	205/50 R-17	\$100
175/65 R-14	56	205/60 R-16	76	215/45 R-17	112
185/60 R-14	65	215/55 R-16	85	215/50 R-17	116
185/65 R-14	65	215/60 R-16	79	215/55 R-17	105
185/70 R-14	57	215/65 R-16	87	215/60 R-17	106
185/60 R-15	61	215/70 R-16	79	215/65 R-17	102
185/65 R-15	62	225/65 R-16	85	215/70 R-17	102
195/55 R-15	80	225/70 R-16	85	225/65 R-17	118
195/60 R-15	64	225/75 R-16	86	225/70 R-17	103
195/65 R-15	64	235/60 R-16	101	225/75 R-17	108
205/60 R-15	69	235/70 R-16	99	225/80 R-17	116
205/65 R-15	70	235/75 R-16	93	235/65 R-17	115
205/70 R-15	61	245/70 R-16	95	235/70 R-17	110
215/60 R-15	74	245/75 R-16	95	245/65 R-17	116
215/65 R-15	72	255/70 R-16	95	245/70 R-17	110
215/70 R-15	64	255/75 R-16	98	265/70 R-17	110
225/70 R-15	75	265/75 R-16	99		

### Altimax Arctic LT (studdable \$15/tire)

U225/75 R-16	\$128	U265/75 R-17	\$137	U285/70 R-17	\$156
U235/75 R-16	134	U285/75 R-17	148	U285/70 R-17	174
U245/75 R-16	140	U245/70 R-17	152		

## BFGoodrich

### Winter Slalom KSI

225/70 R-16	\$68				
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## Continental

### ExtremeWinterContact

185/55 R-15	\$70	215/70 R-16	\$94	215/65 R-17	\$100
185/60 R-15	72	215/75 R-16	104	225/45 R-17	122
185/65 R-15	73	225/60 R-16	96	225/50 R-17	110
195/65 R-15	75	225/65 R-16	95	225/55 R-17	112
205/65 R-15	80	225/70 R-16	100	235/45 R-17	129
205/60 R-15	87	225/75 R-16	115	245/45 R-17	133
215/65 R-15	90	225/80 R-16	116	265/70 R-17	134
215/70 R-15	102	225/85 R-16	116		
215/75 R-15	93	225/90 R-16	104		

### ContiWinterContact TS800

155/60 R-15	\$88	175/55 R-15	\$109		
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### ContiWinterContact TS830 P

235/60 R-18	\$215	295/35 R-19	\$325	<b>ContiWinterConti TS830 P ContiSea</b> 205/55 R-16 <b>\$128</b>
255/55 R-18	219	295/40 R-19	316	
235/40 R-19	281	295/45 R-19	375	
265/40 R-19	306			





# TIRE RACK

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<b>Winter Maxx</b>					
175/70 R-13	\$59	215/70 R-15	\$78	215/60 R-17	\$107
175/70 R-14	69	185/65 R-16	92	215/60 R-18	133
175/70 R-15	62	185/65 R-17	95	215/60 R-19	138
185/60 R-14	73	205/65 R-16	88	215/60 R-20	140
185/60 R-15	74	205/65 R-17	89	215/60 R-21	143
185/70 R-14	66	215/65 R-16	96	215/60 R-22	149
175/65 R-15	72	215/65 R-17	98	215/60 R-23	147
185/60 R-15	82	215/65 R-18	95	215/60 R-24	155
185/60 R-16	76	215/65 R-19	118	215/60 R-25	166
185/60 R-17	77	215/65 R-20	130	215/60 R-26	160
195/60 R-15	86	215/65 R-21	129	215/60 R-27	170
195/60 R-16	82	215/65 R-22	119		
195/60 R-17	80				
205/70 R-15	76				

<b>Graspic DS-3</b>					
175/60 R-15	\$99	175/60 R-16	\$86	245/45 R-19	\$166
185/60 R-15	71	235/40 R-18	164		
<b>SP Winter Sport 4D</b>					
195/65 R-15	\$91	235/55 R-17	\$166	245/40 R-19	\$221
195/65 R-16	109	235/55 R-18	145	235/50 R-19	266
205/55 R-16	112	235/55 R-19	180	<b>DSST (RunFlat)</b>	\$182
225/50 R-16	120	235/55 R-20	197		
225/50 R-17	166	235/55 R-21	215		
225/50 R-18	159				

<b>SP Winter Sport 3D</b>					
215/65 R-16	\$109	255/40 R-18	\$230	255/45 R-19	\$332
225/50 R-16	130	255/40 R-19	215	255/45 R-20	309
225/50 R-17	128	255/40 R-20	279	255/45 R-21	296
225/50 R-18	148	255/40 R-21	239	255/45 R-22	245
225/50 R-19	144	255/40 R-22	239	255/45 R-23	239
225/50 R-20	154	255/40 R-23	239	255/45 R-24	239
225/50 R-21	143	255/40 R-24	239	255/45 R-25	239
225/50 R-22	166	255/40 R-25	239	255/45 R-26	239
225/50 R-23	158	255/40 R-26	239	255/45 R-27	239
225/50 R-24	165	255/40 R-27	239	255/45 R-28	239
225/50 R-25	141	255/40 R-28	239	255/45 R-29	239
225/50 R-26	147	255/40 R-29	239	255/45 R-30	239
225/50 R-27	169	255/40 R-30	239	255/45 R-31	239
225/50 R-28	218	255/40 R-31	239	255/45 R-32	239
225/50 R-29	174	255/40 R-32	239	255/45 R-33	239
225/50 R-30	216	255/40 R-33	239	255/45 R-34	239
225/50 R-31	203	255/40 R-34	239	255/45 R-35	239

<b>SP Winter Sport M3 R0F</b>					
205/55 R-16	\$144	165/65 R-14	\$76		
225/50 R-17	162				



<b>iceGUARD iG52c</b>					
175/65 R-14	\$67	205/50 R-16	\$105	215/55 R-17	\$109
175/70 R-14	70	205/50 R-17	101	215/55 R-18	97
185/60 R-14	62	205/50 R-18	87	215/55 R-19	131
185/60 R-15	69	205/50 R-19	88	215/55 R-20	134
195/60 R-14	70	205/50 R-20	105	215/55 R-21	112
175/65 R-15	76	205/50 R-21	91	215/55 R-22	112
185/60 R-15	73	205/50 R-22	112	215/55 R-23	121
185/60 R-16	74	205/50 R-23	94	215/55 R-24	145
185/60 R-17	74	205/50 R-24	94	215/55 R-25	148
195/60 R-15	78	205/50 R-25	96	215/55 R-26	135
205/60 R-15	81	205/50 R-26	114	215/55 R-27	134
215/65 R-15	84	205/50 R-27	129	215/55 R-28	157

<b>iceGUARD iG51v</b>					
215/70 R-15	\$77	245/70 R-17	\$117	265/60 R-18	\$156
215/70 R-16	83	245/70 R-18	141	265/60 R-19	169
265/70 R-15	108	265/65 R-17	139	235/55 R-19	139
215/65 R-16	106	265/65 R-18	138	245/50 R-20	167
215/70 R-16	108	265/65 R-19	154	245/50 R-21	167
215/70 R-17	107	225/60 R-18	152	245/50 R-22	171
225/60 R-17	111	225/60 R-19	136	245/50 R-23	171
225/60 R-18	114	225/60 R-20	140	245/50 R-24	202
225/60 R-19	114	225/60 R-21	143	245/50 R-25	202
225/60 R-20	115	245/60 R-18	143	245/50 R-26	194
245/65 R-17	122	245/60 R-19	150	245/50 R-27	186

<b>iceGUARD iG20</b>					
185/65 R-15	\$68	195/50 R-16	\$107	235/50 R-18	\$136
185/65 R-16	82	195/50 R-17	100	235/50 R-19	135
185/65 R-17	105	235/45 R-18	151	255/45 R-19	185

<b>Geolander I/T G072</b>					
255/70 R-18	\$122	245/55 R-19	\$154	245/60 R-20	\$182
P265/60 R-18	151	P255/60 R-19	164	275/55 R-20	168
275/65 R-18	149	P235/55 R-19	167		



X-Ice Xi3

215/60 R-17	\$90	215/60 R-18	\$107	215/60 R-19	\$133
215/60 R-20	107	215/60 R-21	106	215/60 R-22	126
215/60 R-23	112	215/60 R-24	109	215/60 R-25	140
215/60 R-26	84	215/60 R-27	108	215/60 R-28	143
215/60 R-29	124	215/60 R-30	129	215/60 R-31	149
215/60 R-32	89	215/60 R-33	112	215/60 R-34	147
215/60 R-35	88	215/60 R-36	110	215/60 R-37	155
215/60 R-38	91	215/60 R-39	119	215/60 R-40	166
215/60 R-41	91	215/60 R-42	167	215/60 R-43	160
215/60 R-44	124	215/60 R-45	201	215/60 R-46	204
215/60 R-47	96	215/60 R-48	204	215/60 R-49	232
215/60 R-50	116	215/60 R-51	206	215/60 R-52	239
215/60 R-53	124	215/60 R-54	239	215/60 R-55	239
215/60 R-56	124	215/60 R-57	239	215/60 R-58	239
215/60 R-59	119	215/60 R-60	239	215/60 R-61	239
215/60 R-62	124	215/60 R-63	239	215/60 R-64	239

Pilot Alpin PA3

215/60 R-17	\$219	215/60 R-18	\$219	215/60 R-19	\$219
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Pilot Alpin PA2

235/40 R-18	\$225	235/40 R-19	\$258	235/40 R-20	\$258
235/40 R-21	258	235/40 R-22	258	235/40 R-23	258
235/40 R-24	141	235/40 R-25	141	235/40 R-26	141

Pilot Alpin PA2 ZP (RunFlat)

225/50 R-17	\$186	245/50 R-18	\$238	245/50 R-19	\$238
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Latitude X-Ice Xi2

215/60 R-17	\$117	215/60 R-18	\$126	215/60 R-19	\$126
215/60 R-20	126	215/60 R-21	126	215/60 R-22	126
215/60 R-23	126	215/60 R-24	126	215/60 R-25	126
215/60 R-26	126	215/60 R-27	126	215/60 R-28	126
215/60 R-29	126	215/60 R-30	126	215/60 R-31	126
215/60 R-32	126	215/60 R-33	126	215/60 R-34	126
215/60 R-35	126	215/60 R-36	126	215/60 R-37	126
215/60 R-38	126	215/60 R-39	126	215/60 R-40	126
215/60 R-41	126	215/60 R-42	126	215/60 R-43	126
215/60 R-44	126	215/60 R-45	126	215/60 R-46	126
215/60 R-47	126	215/60 R-48	126	215/60 R-49	126
215/60 R-50	126	215/60 R-51	126	215/60 R-52	126
215/60 R-53	126	215/60 R-54	126	215/60 R-55	126
215/60 R-56	126	215/60 R-57	126	215/60 R-58	126
215/60 R-59	126	215/60 R-60	126	215/60 R-61	126
215/60 R-62	126	215/60 R-63	126	215/60 R-64	126
215/60 R-65	126	215/60 R-66	126	215/60 R-67	126
215/60 R-68	126	215/60 R-69	126	215/60 R-70	126
215/60 R-71	126	215/60 R-72	126	215/60 R-73	126
215/60 R-74	126	215/60 R-75	126	215/60 R-76	126
215/60 R-77	126	215/60 R-78	126	215/60 R-79	126
215/60 R-80	126	215/60 R-81	126	215/60 R-82	126
215/60 R-83	126	215/60 R-84	126	215/60 R-85	126
215/60 R-86	126	215/60 R-87	126	215/60 R-88	126
215/60 R-89	126	215/60 R-90	126	215/60 R-91	126
215/60 R-92	126	215/60 R-93	126	215/60 R-94	126
215/60 R-95	126	215/60 R-96	126	215/60 R-97	126
215/60 R-98	126	215/60 R-99	126	215/60 R-100	126

Latitude X-Ice Xi2 ZP

215/60 R-17	\$256	215/60 R-18	\$256	215/60 R-19	\$256
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Latitude Alpin

225/55 R-18	\$184	255/55 R-19	\$183	255/55 R-20	\$183
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Latitude X-Ice Xi2 ZP

215/60 R-17	\$256	215/60 R-18	\$256	215/60 R-19	\$256
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Latitude Alpin

225/55 R-18	\$184	255/55 R-19	\$183	255/55 R-20	\$183
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Latitude X-Ice Xi2 ZP

215/60 R-17	\$256	215/60 R-18	\$256	215/60 R-19	\$256
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Latitude Alpin

225/55 R-18	\$184	255/55 R-19	\$183	255/55 R-20	\$183
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Latitude X-Ice Xi2 ZP

215/60 R-17	\$256	215/60 R-18	\$256	215/60 R-19	\$256
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Latitude Alpin

225/55 R-18	\$184	255/55 R-19	\$183	255/55 R-20	\$183
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Latitude X-Ice Xi2 ZP

215/60 R-17	\$256	215/60 R-18	\$256	215/60 R-19	\$256
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Pilot Alpin PA4

225/65	R-16	XL	1
235/60	R-16	XL	1
205/50	R-17	XL	1
		XL	1
215/60	R-17	XL	1
215/65	R-17	XL	1
		XL	1
225/60	R-17	XL	1



2016 AUDI TT S / TOYOTA CAMRY / CHEVY COLORADO / BMW 428i GRAN COUPE / MINI COOPER S HARDTOP 4 DOOR AND HARDTOP



## • HATCHBACK

# 2016 AUDI TT

The new TT looks to its past to move forward.

by Jens Meiners

Maybe no evolution of the Audi TT can have the impact of the original. When Audi conceived the TT in the mid-1990s, the little coupe and cabrio came into a virtually deserted segment and served as a statement of Audi's commitment to style and precision. Like the 5000 more than a decade before it, the TT pointed to Audi's relevance in the design world.

The second-generation TT, launched in the 2006 calendar year, was a better

vehicle in many respects, but it lacked the uncompromising spirit of the original. The third generation, on sale in Europe right now, has a bit more design rigor than its immediate predecessor, but neither is it the landmark shape to launch a renaissance.

What we will get, when it arrives here in a year, is a nicely motivated coupe using some lightweight MQB components in its space frame. While the least powerful engine in European versions is a 184-hp

## ▼ SPECIFICATIONS

<b>VEHICLE TYPE:</b> front-engine, 4-wheel-drive, 2+2-passenger, 3-door hatchback	
<b>BASE PRICE (est)</b>	\$42,000
<b>ENGINE TYPE:</b> turbocharged and intercooled DOHC 16-valve inline-4, iron block and aluminum head, port and direct fuel injection	
<b>DISPLACEMENT</b>	121 cu in, 1984 cc
<b>POWER</b>	220 hp @ 6200 rpm
<b>TORQUE</b>	258 lb-ft @ 1600 rpm
<b>TRANSMISSION:</b> 6-speed dual-clutch automatic with manual shifting mode	
<b>DIMENSIONS</b>	
<b>WHEELBASE</b>	98.6 in
<b>LENGTH</b>	164.4 in
<b>WIDTH</b>	72.1 in
<b>HEIGHT</b>	53.3 in
<b>CURB WEIGHT</b>	3050 lb
<b>PERFORMANCE (C/D EST)</b>	
<b>ZERO TO 60 MPH</b>	5.1 sec
<b>ZERO TO 100 MPH</b>	12.9 sec
<b>1/4-MILE</b>	13.7 sec
<b>TOP SPEED</b>	155 mph
<b>PROJECTED FUEL ECONOMY (C/D EST)</b>	
<b>EPA CITY/HWY</b>	24/33 mpg





↑ It doesn't inspire awe as the first TT did, but its interior is spare and beautiful in a way that's reminiscent of the original.

transmission for the U.S. version will be a six-speed dual-clutch automatic, and Quattro four-wheel drive will be standard.

While the TT feels quick, there is slight turbo lag, albeit effectively masked by the swift action of the dual-clutch gearbox. Push the touchy gas pedal and this Audi hisses and whooshes forward in a rush. The TT turns into corners eagerly, and the sport setting of the stability-control system allows for considerable drift angles before intervening. The electrically boosted power steering is wonderfully precise and nicely weighted.

There is no hiding the fact that the TT has the bones of more mass-market cars, however. Its seating position is a bit higher

than that of, say, a Porsche Cayman or a BMW Z4. While this may dampen the extreme sports-car effect, it does help visibility.

But make no mistake—there is no confusing the TT for an A3 from the inside. Audi has simplified and de-cluttered the dashboard, eliminating the central display in the process. All information, including the navigation map, is now directly in front of the driver on an ultra-high-quality TFT display. In one mode, a huge map digitally dispatches the tach and speedometer to the outer corners of the screen.

The HVAC controls, as well as the heated-seat controls, are integrated into the five air vents. And the MMI infotainment system now features the brand's touchpad interface. The ultra-clean interior looks futuristic and well-integrated. Passengers may complain about the lack of a central screen, but this is a sports car, right? As for rear accommodations, we suggest just folding those seats down to get the extra cargo space; for adults, the claustrophobic rear compartment is torture. (Not that Audi promises more. It says the rear seats aren't recommended for anyone taller than 4 feet 9 inches.)

The Audi TT will come to the U.S. in mid-2015 as a 2016 model; we estimate its base price will be slightly north of \$40,000. The original's strict design orthodoxy may be a thing of the past, but the car's inherent approachability isn't.



2.0-liter TDI, U.S. customers will see 220 horsepower and 258 pound-feet of twist from a standard EA888 2.0-liter gasoline turbo. Despite the relatively modest power rating, the TT charges forward with zeal, in part thanks to its 3050-pound curb weight. The second-generation TT tipped the scales some 200 pounds lighter than the first-gen version, and now the third-gen TT has dieted hard to lose another 90. We expect the sprint from zero to 60 mph will take about 5.1 seconds. Top speed, according to Audi, is 155 mph. The only available





## 2016 AUDI TTS

More power, more style, more TT. *by Jens Meiners*

The new 2016 Audi TT is quite competent and good fun to drive, but 220 horsepower just doesn't cut it for most enthusiasts in today's performance environment. We've become spoiled by affordable coupes and sports cars, many of which pack at least two more cylinders than this Audi. It's a good thing, then, that there's a TTS model again, perfect for aesthetes with a speed fetish.

To be launched in America in mid-2015 as a 2016 model, it gets an estimated 292 horsepower and 280 pound-feet of torque

↓ The TTS, like the upcoming S3 sedan with which it shares its engine, will be available only with a six-speed dual-clutch transmission.

from its EA888 turbocharged four-cylinder. (European models, such as the one we drove for this review, have slightly more power.) Though it brings no additional cylinders to the table, the 72 additional horsepower and 22 extra pound-feet are extracted from the turbo four without sacrifice. The TTS's engine is very responsive by the standards of forced induction, and it emits a slightly more pronounced variation of the same well-honed, mischievous soundtrack. When upshifting under load, for example, the exhaust lets fly a sweet popping sound.

We expect the run to 60 mph to take just 4.5 seconds, 0.6 second quicker than the regular-grade TT. Top speed is gov-

### ▼ SPECIFICATIONS

**VEHICLE TYPE:** front-engine, 4-wheel-drive, 2+2-passenger, 3-door hatchback

**BASE PRICE (est)** ..... \$55,000

**ENGINE TYPE:** turbocharged and intercooled DOHC 16-valve inline-4, iron block and aluminum head, port and direct fuel injection

**DISPLACEMENT** ..... 121 cu in, 1984 cc

**POWER** ..... 292 hp @ 6200 rpm

**TORQUE** ..... 280 lb-ft @ 1800 rpm

**TRANSMISSION:** 6-speed dual-clutch automatic with manual shifting mode

#### DIMENSIONS

**WHEELBASE** ..... 98.6 in

**LENGTH** ..... 165.0 in

**WIDTH** ..... 72.1 in

**HEIGHT** ..... 52.9 in

**CURB WEIGHT** ..... 3150 lb

#### PERFORMANCE (C/D EST)

**ZERO TO 60 MPH** ..... 4.5 sec

**ZERO TO 100 MPH** ..... 12.3 sec

**1/4-MILE** ..... 13.0 sec

**TOP SPEED** ..... 155 mph

#### PROJECTED FUEL ECONOMY (C/D EST)

**EPA CITY/HWY** ..... 24/32 mpg

erned at 155 mph, and the only transmission offered is a six-speed dual-clutch automatic. The TTS also is all-Quattro, all the time. That's fine with us, but it is a shame that the company won't offer the slick six-speed manual in the U.S.

Although it borrows some components of the VW Group's MQB front-wheel-drive platform, the TTS exhibits almost no understeer and turn-in is impressively quick. It's also a bit easier to induce some playful oversteer here than in the TT. As with the base car, we're impressed by the electrically boosted power steering, which is accurate, weighty, and responsive enough that only the hardest of hard-core purists will wish for a hydraulic setup. The TTS also stays nicely planted on undulating and heaving roads, offering more than enough grip for mortals to exploit. (Okay, so the photo above proves the TTS isn't always planted. But it remains entirely unfazed by such an exercise.)

Interior materials are high quality, and they feel upmarket without trying to mimic traditional luxury. The centerpiece of the whole shebang is a TFT instrument cluster.

With its additional muscle and similar curb weight, the TTS has no trouble distancing itself from the TT. When it hits dealerships stateside, expect a price of entry around the \$55,000 mark. Later, there will be an even more powerful derivative, the next-gen TT RS, which will arrive packing a 2.5-liter five-cylinder good for more than 400 turbocharged horsepower. Until then, though, the TTS works just fine for us as a credible and competitive sports coupe.







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## TOYOTA CAMRY

America's favorite family sedan gets an early fluff and buff. *by Don Sherman*



↑ Top: The high-spec XSE certainly looks sportier than previous Camrys. Alas, it remains a soft, quiet, and comfy Camry.

Hawaii's Big Island, the world epicenter of bliss, is a good place to enjoy a Toyota Camry's soothing interior, placid ride, and worry-free disposition. Pavement imperfections and speeds above 55 mph are forbidden here. Drive a Camry—any Camry—in Hawaii and you might wonder why the world's most methodical carmaker would call its prodigy in for fresh Mai Tais (virgin, of course) only three years after its last redesign. The easy answer is because it can: With more than 400,000 Camrys sold in the U.S. last year and twice that volume worldwide, there's ample cash to fund this company's \$1-million-per-hour R&D budget.

The harder answer, at least for Toyota, is this: Half a dozen competitors now offer mid-size sedans that shame the Camry's dynamic abilities.

So, without risking core virtues of

dependability, comfort, and value, Toyota has blessed the 2015 Camry with a major freshening. There are two new faces, gently creased side surfaces, upgraded interiors, and chassis tweaks for nine distinct powertrain and trim combinations. The base 2.5-liter four-cylinder, 3.5-liter V-6, six-speed automatic, and gas-electric hybrid powertrain are the only stones left unturned.

Camry LEs and XLEs get a silver five-bar grille reminiscent of the Avalon. The SE and the new XSE versions get a racy Lexus-esque black honeycomb air sucker. All wear front-corner scars and patches on their C-pillars. It gets better, and somewhat less contrived, inside. Most of the previous hard plastic is now soft, and French seams are stitched into the upper models' dashes, steering wheels, and door surfaces. The XSE and XLE seats are trimmed in ultra-

suede and/or perforated leather.

The bounty of electronic assists now includes lane keeping, automatic braking, rear-collision alert, radar-based cruise control, and automatic headlamp dimming. All Camrys get a backup camera; most get a 4.2-inch screen in the instrument cluster for driver info, nav instructions, and warning messages. Splurging on the JBL sound system nets 10 speakers and 586 watts. Control knobs and labels are oversized for the bifocal set; tapping the appropriate center-screen icon will reset the clock or sync a smartphone. The coolest option is a console pad that inductively recharges your smartphone or MP3 player.

Toyota engineers based near our Ann Arbor ops center added 22 spot welds to



## ▼ SPECIFICATIONS

**VEHICLE TYPE:** front-engine, front-wheel-drive, 5-passenger, 4-door sedan

**BASE PRICE** ..... \$23,795–\$32,195

**ENGINES:** DOHC 16-valve 2.5-liter inline-4, 178 hp, 170 lb-ft; DOHC 16-valve 2.5-liter Atkinson-cycle inline-4, 156 hp, 156 lb-ft + AC electric motor, 141 hp, 199 lb-ft (combined system, 200 hp); DOHC 24-valve 3.5-liter V-6, 268 hp, 248 lb-ft

**TRANSMISSIONS:** 6-speed automatic with manual shifting mode, continuously variable automatic

### DIMENSIONS

**WHEELBASE** ..... 109.3 in

**LENGTH** ..... 190.9 in

**WIDTH** ..... 71.7 in

**HEIGHT** ..... 57.9 in

**CURB WEIGHT** ..... 3250–3600 lb

### PERFORMANCE (C/D EST)

**ZERO TO 60 MPH** ..... 5.8–7.8 sec

**ZERO TO 100 MPH** ..... 14.2–22.2 sec

**1/4-MILE** ..... 14.4–16.4 sec

**TOP SPEED** ..... 115–130 mph

### FUEL ECONOMY

**EPA CITY/HWY** ..... 21–43/31–39 mpg

stiffen the body structure, as well as a thick layer of foam insulation under the carpet. They tweaked the electrically assisted power steering, the suspension calibrations, the brake booster, and the stability-control system. The maximum gain in curb weight is 95 pounds.

Most of this massaging will be missed by Camry tire kickers, but anyone who takes a drive around the block will appreciate the crypt-quiet cabin and superb furniture. The front backrests provide the gentlest of bear hugs in bends. Three adults fit in the chair-high rear bench without wrestling for elbow or foot room. The rear backrest folds and splits—even in the hybrid—to haul a surfboard or two.

We were surprised to learn that 83 percent of Camry buyers select the base four-

↑ Above: Toyota has significantly enhanced the Camry's interior richness. Bottom: Three adults can sit comfortably in the rear.

cylinder engine. One passing maneuver on a slight upgrade north of Kona convinced us that 178 horsepower, even when augmented by fervent prayer, is insufficient for any 3500-pound sedan. Stepping up to the hybrid Camry is the more prudent choice. The drone that makes the Prius such a penalty box is muted here, there's enough power to cruise the left lane without humiliation, and only the top XLE hybrid trim level cracks the \$30,000 base-price ceiling. And when you're not flouting speed limits, 40 mpg is easily within reach with the Camry's gas-electric powertrain.

If Hawaii were truly the heaven depicted in travel brochures, this is where we'd report that the top Camry XSE V-6 is the \$32,195 sports sedan you've been waiting for. Alas, that's not the case, in spite of promising-sounding specs—268 horsepower and 225/45 rubber on 18-inch wheels. Unfortunately, the "XtraSporty-Edition" rebuffs heavy-throttle, aggressive-cornering, and late-braking antics.

The all-season tires howl early in the game, the suspension surrenders to body roll, and the transmission automatically upshifts when you crowd the redline. While the steering is tight on-center, there's minimal rise in effort as the g's rise and virtually no clues about the road surface through the wheel. At least the XSE's stability control never intervened when we hot-lapped Big Island traffic circles.

Camry fans will love the fluff and buff bestowed on their favorite transportation appliance. It's still too docile for our tastes, but we're encouraged by how much a few spot welds and chassis mods can achieve. We hope that the Ann Arbor Camry engineers are furiously assaulting our semi-secret back roads with next-generation prototypes in pursuit of a more vigorous XSE model capable of running with the best mid-size sedan rivals.



# CHEVROLET COLORADO

Chevrolet's attempt to take Tacos off the menu.

by Andrew Wendler

One could argue that the Toyota Tacoma's dominance of its semi-full-size truck segment is attributable to its easily condensed name. As in, "Hey, brah, sweet Taco." It's probably no coincidence that the Los Angeles area, where people say "brah" a lot, accounts for the bulk of Taco sales.

It helps that the Nissan Frontier—just try to come up with an equally illustrative and organic chunk of lazy vernacular for that name—has been the only other player in the segment for the last few years, and the truck is almost 10 years old. So Toyota hasn't exactly *needed* to be on the offensive. Sensing an opportunity where other manufacturers—such as Ford (Ranger)

and Dodge (Dakota)—have fled, Chevrolet is bringing an all-new mid-size (larger than a Tacoma, smaller than a Silverado) Colorado to market in hopes of stealing some of the Tacoma's juju.

GM is hoping that the Colorado's combination of decent payload and towing capabilities with contemporary styling and low NVH levels will do the trick. Brad Schreiber, ride-and-handling-performance engineer for GM mid-size trucks, runs down the list of details that contribute to the refinement: triple-sealed doors, lots of sound-deadening materials, and, on the Z71, the tread pattern of the Good-

## SPECIFICATIONS

**VEHICLE TYPE:** front-engine, rear- or rear/4-wheel-drive, 5-passenger, 2+2- or 4-door pickup

**BASE PRICE** ..... \$20,995-\$35,290

**ENGINES:** DOHC 16-valve 2.5-liter inline-4, 200 hp, 191 lb-ft; DOHC 24-valve 3.6-liter V-6, 305 hp, 269 lb-ft

**TRANSMISSIONS:** 6-speed manual, 6-speed automatic with manual shifting mode

### DIMENSIONS

**WHEELBASE** ..... 128.3-140.5 in

**LENGTH** ..... 212.7-224.9 in

**WIDTH** ..... 74.3 in

**HEIGHT** ..... 70.3-70.7 in

**CURB WEIGHT** ..... 4000-4300 lb

### PERFORMANCE (C/D EST)

**ZERO TO 60 MPH** ..... 6.9-7.5 sec

**1/4-MILE** ..... 15.3-15.9 sec

**TOP SPEED** ..... 100 mph

### FUEL ECONOMY

**EPA CITY/HWY** ..... 17-18/24-26 mpg

year Wrangler all-terrain tires. Our first impression is that it's dramatically quieter at highway speeds than the aging Tacoma. Credit also the Colorado's *fully* boxed frame, downsized from a Silverado design.

↓ Call it mid-size or almost-full-size, the Colorado should satisfy most buyers who don't need all the capabilities of a Silverado.







↑ Above: Comfortable and unpretentious, the Chevrolet Colorado's roomy cockpit is the gray sweat shirt of automotive interiors.

size pickup truck. But it's light-years better than the current Tacoma, previous Colorado, or even the late Ranger. Likewise, the braking is dramatically modern, and a firm, easy-to-modulate pedal hauls down the truck with authority. The chassis tune mitigates serious brake dive.

Although true off-roading wasn't part of the plan, we did manage to find a dusty, rutted, and steeply inclined dirt road to get that four-wheelin' feelin' in a Z71 crew cab. Low range engages without any clunking or funkiness, and the truck crawled up the incline with little drama, thanks in part to its automatic-locking rear differential. With electric power steering, positioning a tire atop a crusty embankment is a one-handed job. Higher speeds on a flat section revealed a planted feel with well-proportioned braking in the dirt.

Sadly, we never found the right off-road terrain to fully assess the capabilities of the suspension during our drive. As a final test, we backed up the incline and then let the Z71's standard hill-descent control determine our fate on the way back down. We lived.

All Colorado models have a 3500-pound tow rating by default, but buyers of the V-6 models can double that number to 7000 pounds by selecting the \$250 Z82 trailering package (essentially a two-inch receiver and a wiring harness) and the \$325 locking rear diff. Starting with the heaviest items and working backward, we tugged a 4500-pound fiberglass boat; a pair of personal watercraft; and, in a scenario that should paint a misty-eyed picture for an entire generation of Tacoma owners, a pair of dirt bikes on an open trailer.

The tow/haul mode (not available on four-cylinder trucks) does a good job of

selecting the right gear to keep the engine in the meat of its torque curve with the boat in tow, although the engine does get a tad raucous at higher rpm. The personal watercraft proved of little burden, and the dirt bikes were virtually undetectable from the helm. Are its abilities comparable to those of an HD diesel or even a big gas V-8? Nope. But, unlike the previous-gen Colorado, which launched with four- and five-cylinder inline engines so tepidly received that GM was essentially forced into offering a V-8 as an option, the new Colorado arrives in an era attuned to doing more with less. Although the 3.6-liter V-6 gives up 51 pound-feet of twist to the old truck's 5.3-liter V-8 (269 pound-feet from 320), horsepower is up slightly at 305 for the V-6 versus 300 for the V-8. And the 7000-pound max tow rating for the 2015 Colorado soundly trumps the old truck's by an even 1000 pounds.

Chevy has bet this particular bank on the theory that "people will buy as much truck as they need if given the choice." If nothing else, the Colorado will serve as a real-time-analysis model of that concept. While the full-size-truck world will likely continue in its chest-thumping game of tow-rating one-upmanship, the Colorado offers a legitimate alternative for those who have come to the realization that they don't need a diesel HD to haul around a bass boat two or three times a year. We agree.

Comments made to us by a pair of sun-baked kayakers along the beach of affluent Del Mar, California, indicate that GM may have hit the sweet spot.

"Dude, is that the new Chevy mid-size truck? It looks awesome." Maybe Chevrolet should have named it the 'Rado right out of the gate.

There's plenty of room for stout American body shapes to get comfortable inside, with 41.4 inches of headroom and 45.0 inches of legroom in the front seats. Thanks to the adjustable steering column, even six-and-a-half-footers will have no problem finding a comfortable driving position. Fabrics and plastics are understated, consisting largely of matte-finished blacks and grays.

The 305-hp 3.6-liter V-6 is no race-horse, but it pulls strongly through all six of its mandatory automatic's gears. Tradesmen and fleet managers will likely find that the 200-hp four-cylinder has enough power to get through the workday; still, the bigger engine makes this truck more enjoyable. (A six-speed manual will be available for base four-cylinder models, but we haven't yet wiggled its shifter.)

Transitional responses are reasonably quick; close your eyes and you might think you're behind the wheel of... okay, a mid-



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## ▼ SPECIFICATIONS

**VEHICLE TYPE:** front-engine, rear-wheel-drive, 5-passenger, 5-door hatchback  
**PRICE AS TESTED** ..... \$52,300  
**BASE PRICE** ..... \$41,250  
**ENGINE TYPE:** turbocharged and intercooled DOHC 16-valve inline-4, aluminum block and head, direct fuel injection  
**DISPLACEMENT** ..... 122 cu in, 1997 cc  
**POWER** ..... 240 hp @ 6000 rpm  
**TORQUE** ..... 255 lb-ft @ 1250 rpm  
**TRANSMISSION:** 8-speed automatic with manual shifting mode  
**DIMENSIONS**  
**WHEELBASE** ..... 110.6 in  
**LENGTH** ..... 182.6 in  
**WIDTH** ..... 71.9 in  
**HEIGHT** ..... 54.7 in  
**CURB WEIGHT** ..... 3664 lb

## ▼ C/D TEST RESULTS

**ZERO TO 60 MPH** ..... 5.5 sec  
**ZERO TO 100 MPH** ..... 14.9 sec  
**ZERO TO 140 MPH** ..... 36.3 sec  
**ROLLING START, 5-60 MPH** ..... 6.5 sec  
**1/4-MILE** ..... 14.2 sec @ 98 mph  
**TOP SPEED (governor limited)** ..... 156 mph  
**BRAKING, 70-0 MPH** ..... 162 ft  
**ROADHOLDING, 300-FT-DIA SKIDPAD** ..... 0.89 g  
**FUEL ECONOMY**  
**EPA CITY/HWY** ..... 23/34 mpg  
**C/D OBSERVED** ..... 27 mpg

**TEST NOTES:** The best launch technique is something between a full brake torque and just mashing the gas. Release the brakes as the engine speed is still climbing and let the trans shift on its own.

# BMW 428i GRAN COUPE

**TESTED** Most attractive BMW compact with more than two doors, practical hatchback trunk.  
 No manual transmission, more body styles do not make a better car. *by Jeff Sabatini*

What's this? Yet another derivative of the F30 BMW 3-series? Indeed, that benign sedan has now sired a wagon, a long-wheelbase Gran Turismo five-door, and the 4-series trio of coupe, convertible, and this Gran Coupe—which, despite its name, is not a coupe. Its door count doesn't make it a sedan, either, because this five-seater is actually a cleverly disguised hatchback.

BMW's bits have grown as familiar as our own reflections. Either a 2.0-liter turbocharged four-cylinder making 240 horses and 255 pound-feet of torque or a turbocharged 3.0-liter inline-six rated at 300 horsepower and 300 pound-feet gets

matched with a ZF-sourced eight-speed automatic. While four-wheel drive is a \$2000 option, a manual transmission cannot be had in the Gran Coupe at any price. The 428i model starts at \$41,250 and the 435i at \$46,750, a \$300 savings against each corresponding 4-series coupe.

Our 428i GC's test sheet reads like a duplicate of the coupe's. With identical gearing and wearing the same staggered 18-inch Bridgestone Potenza 5001 run-flat summer tires, the GC ran the quarter-mile in 14.2 seconds at 98 mph, just a tenth of a second and 1 mph behind the coupe. A 162-foot stop from 70 mph trims two feet from the coupe's performance. Skidpad grip was the same at 0.89 g.

The cars betray no more difference on the road. Once you've selected the sport driving mode to stiffen up the adaptive dampers included in the \$1000 Dynamic Handling package on our test car, the GC displays the platform's customary trait: a satisfyingly solid control of body motions undermined by unexceptional steering feel.

The 3664-pound Gran Coupe weighs 135 pounds more than the coupe, enough

to drop the EPA highway rating from 35 mpg to 34 for the GC. We saw 27 combined.

Though there is a half-inch less headroom than in the 3-series sedan, rear accommodations are still fit for adults. BMW cites equivalent cargo capacities for the sedan and GC, yet we were able to stuff an additional fifth bag of mulch in the hatch. Certainly, you could do worse in choosing a BMW from the 3-/4-series line (e.g., the cetacean Gran Turismo).

Can you do better? Hard to say. BMW offers twice as many body styles now as it did in the 3-series range of a decade ago. This can only escalate expectations: With so many cars, surely one of them has to be perfect! But as we drive every new variant, we wonder what compromises were made to the original formula to allow it to work for the additional models, and how much time BMW was able to spend tuning each one. The truth is that their differences are outweighed by their similarities, the most prominent being that no 3- or 4-series is as engaging as in years past.

BMW is determined to see exactly how thinly it can slice the 3-/4-series pie. If it added a "d" to Gran, would it be a new model?





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# MINI COOPER S HARDTOP 4 DOOR

The closest thing yet to a Mini sedan. *by Csaba Csere*



BMW's creation of the modern Mini Cooper 13 years ago would make a great Harvard Business School brand-management study. Starting with a car based very loosely on a model that never saw much success in America, BMW fashioned an automotive simulacrum that caught the imagination of buyers looking for small cars with style and panache.

In the intervening years, Mini has judiciously added variations on the theme—including a tiny SUV—and redesigned the

↓ Having a hard time imagining what a four-door Mini would look like? See below for an accurate visual representation of the model.

basic car twice. But until now, there has never been a proper four-door.

Starting in January, Mini dealers will rectify that oversight with the Cooper Hardtop 4 Door, as Mini calls it. God forbid there are any hatchback references, even though that's what it is. From the A-pillars forward it's unchanged from the three-door Hardtop [see page 120], but its wheelbase is nearly three inches longer and the overall length

grows a bit more than six inches.

The extra space between the axles goes into rear legroom and enlarges the rear seat sufficiently to accommodate two average American males, at least briefly. A roof that is imperceptibly flatter than the three-door's ensures adequate rear headroom.

The rest of the stretch goes into a larger luggage area, which increases over the smaller Cooper from 9 to 13 cubic feet with the rear seat in place, and from 38 to 41 cubic feet with the new 60/40 rear seat folded. The Hardtop 4 Door doesn't match the packaging magic of the Honda Fit but

## ▼ SPECIFICATIONS

<b>VEHICLE TYPE:</b> front-engine, front-wheel-drive, 5-passenger, 5-door hatchback	
<b>BASE PRICE</b>	\$22,300-\$25,950
<b>ENGINES:</b> turbocharged and intercooled DOHC 12-valve 1.5-liter inline-3, 134 hp, 162 lb-ft; turbocharged and intercooled DOHC 16-valve 2.0-liter inline-4, 189 hp, 207 lb-ft	
<b>TRANSMISSIONS:</b> 6-speed manual, 6-speed automatic with manual shifting mode	
<b>DIMENSIONS</b>	
<b>WHEELBASE</b>	101.1 in
<b>LENGTH</b>	157.4-158.0 in
<b>WIDTH</b>	68.0 in
<b>HEIGHT</b>	56.1 in
<b>CURB WEIGHT</b>	2750-2950 lb
<b>PERFORMANCE (C/D EST)</b>	
<b>ZERO TO 60 MPH</b>	6.7-7.6 sec
<b>ZERO TO 100 MPH</b>	17.7-21.0 sec
<b>1/4-MILE</b>	15.2-16.1 sec
<b>TOP SPEED</b>	130-145 mph
<b>PROJECTED FUEL ECONOMY (C/D EST)</b>	
<b>EPA CITY/HWY</b>	24-28/37-40 mpg

is instead more like the Ford Fiesta in both exterior size and interior space.

The Hardtop 4 Door will come with the same powertrains as the Hardtop: turbocharged three- and four-cylinder engines coupled to six-speed manual and automatic transmissions. Only the Cooper S, with the 189-hp four-cylinder fitted to the automatic, was available for our initial drive, and we didn't much notice the 135 pounds added by the body enlargement.

This modestly boosted 2.0-liter engine with 207 pound-feet of torque at 1250 rpm motivates the 2950-pound car without effort. The transmission is well matched to the engine and shifts smoothly, though it does favor the upper gears in the never-ending search for fuel efficiency. If you want a more aggressive gear selection, switch the car into sport mode or use the conveniently placed paddle shifters.

With its increased length, the 4 Door Hardtop feels solid and substantial. Steer-





ing effort is moderate and heavily damped, so the Cooper S, while agile, never feels twitchy. The one exception is full throttle in the lower gears, when the front end loses its self-centering in the way of many potent front-wheel-drive cars.

On English roads, the suspension calibration delivered a great combination of control and suppleness in the "mid" of the three modes. But when you switch the mode setting to sport, the ring of LEDs surrounding the central display glows red momentarily, and the display promises "maximum go-kart feel." Not surprisingly, the car pogs over larger bumps.

Visual excitement is everywhere in this Mini, with that ring of LEDs turning into a temperature indicator when you are changing the heater setting and becoming a secondary tachometer during normal driving. There's also mood lighting created by large but subtle glowing arcs of light in all four door panels.

The interior is creatively styled, with highly sculpted, three-dimensional dash panels; elegant matte-finished wood trim; and lots of high-quality brightwork. The switches and controls look rich and move with precision.

This should come as no surprise because this car is essentially a BMW under its skin. Its infotainment system is pure iDrive, controlled by a large central knob, though with different graphics. The trip computer in the instrument cluster is controlled by a button on the turn-signal stalk, as in any BMW.

The same goes for its mechanical bones. The four-cylinder engine in the Cooper S, as well as the three-cylinder variant in the base Cooper, is part of a new engine family that will soon power most BMWs. And this front-drive platform, named UKL, will form the basis of the next-generation 1-series cars.

Sadly, BMW hardware comes with BMW-like pricing. The Cooper S version that we drove starts at \$25,950, which includes \$1000 for the two additional doors but not the automatic. Not only is that thousands more than a Ford Fiesta ST of roughly comparable performance, but the fully optioned price of the car we drove was \$35,900—with a few items unselected.

That ability to sell at substantially higher prices than its competitors is what makes Mini such a great business case. For the rest of us, this new model adds utility without compromising the Mini's looks, performance, image, or nimble size. We wouldn't be surprised if it became the brand's bestselling model.

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# MINI COOPER HARDTOP

**TESTED**  Premium feel finally matches premium price.  \$10K in options on a \$20K car, feels leaden, run-flat tires, the “cheeky” thing is wearing a bit thin.  
*by Alexander Stoklosa*

Under BMW's stewardship, the Mini Cooper has been a rambunctious ball of hanky-panky, all stiff ride, manic responses, and general churlishness. Alas, the blouses are being rebuttoned and the flies re-zipped, for—like a parent interrupting a teen groping session—BMW is tossing some cold water on its spry British hatchback.

It starts with forcing the Mini onto BMW's new, larger front-drive platform. BMW's compact UKL structure won't go any smaller, meaning the base Cooper tested here, relative to its predecessor, is saddled with a 209-pound ball and chain plus a larger footprint. As it does in the 189-hp Cooper S, the enlargement dulls the car's responses and calms the ride.

That the S model shrugs off the chub when accelerating is expected; that this less-powerful Cooper does the same is not.

Credit the spunky turbocharged 1.5-liter three-cylinder from BMW's new small-engine family. Up 16 horsepower and 48 pound-feet of torque on the old Cooper's 1.6-liter four—for totals of 134 ponies at 6000 rpm and 162 pound-feet at 1250—the triple doesn't much notice the Cooper's recent Bavarian spaetzle binge. We hit 60 mph in 7.3 seconds, 0.4 second quicker than in the outgoing model and nearly as expediently as the first-gen supercharged Cooper S.

The engine's slender power band sits low in the rev range and is yoked to gearing taller than a skyscraper (at 100 mph in sixth, the tach reads just over 3000 rpm). So, the motor is markedly calm on the highway. Diligent shifting is required for

↓ Powered by a turbocharged three-cylinder, this bigger, heavier Mini Cooper is almost as quick as the first-generation Mini Cooper S.



## SPECIFICATIONS

**VEHICLE TYPE:** front-engine, front-wheel-drive, 4-passenger, 3-door hatchback  
**PRICE AS TESTED** ..... \$30,400  
**BASE PRICE** ..... \$21,300  
**ENGINE TYPE:** turbocharged and intercooled DOHC 12-valve inline-3, aluminum block and head, direct fuel injection  
**DISPLACEMENT** ..... 91 cu in, 1499 cc  
**POWER** ..... 134 hp @ 6000 rpm  
**TORQUE** ..... 162 lb-ft @ 1250 rpm  
**TRANSMISSION:** 6-speed manual  
**DIMENSIONS**  
**WHEELBASE** ..... 98.2 in  
**LENGTH** ..... 151.1 in  
**WIDTH** ..... 68.0 in  
**HEIGHT** ..... 55.7 in  
**CURB WEIGHT** ..... 2764 lb

## C/D TEST RESULTS

**ZERO TO 60 MPH** ..... 7.3 sec  
**ZERO TO 100 MPH** ..... 20.7 sec  
**ZERO TO 120 MPH** ..... 38.7 sec  
**ROLLING START, 5-60 MPH** ..... 8.3 sec  
**1/4-MILE** ..... 15.8 sec @ 89 mph  
**TOP SPEED (drag limited)** ..... 132 mph  
**BRAKING, 70-0 MPH** ..... 169 ft  
**ROADHOLDING, 300-FT-DIA SKIDPAD** ..... 0.86 g  
**FUEL ECONOMY**  
**EPA CITY/HWY** ..... 30/42 mpg  
**C/D OBSERVED** ..... 32 mpg

■ **TEST NOTES:** Launching above 3000 rpm yields the best acceleration. Moderate understeer at the cornering limit makes this generation less wily than its predecessor.

maximum haste. Yet even when fully wound out, the three-pot remains baby-bottom smooth and emits only a pleasing gurgling sound and subtle turbo whistle. We recorded an average of 32 mpg—2 more than the old Cooper.

Though the interior is now covered in quality soft plastics and a BMW-derived display replaces the old car's silly central speedometer, rebelliousness still abounds. The air-conditioning vents are buried behind the steering-wheel rim. The iDrive-like knob is buried between the front seats. And the headlight controls are buried under the dashboard. Similarly, front passengers sit curiously far back and low, allowing a rear-legroom gain of just 2.9 inches, or enough to finally accommodate the legs of ventriloquist dummies. And there's little whimsy in the driver's view forward, which is all distant gun-slit windshield and thick A-pillars.

Given how little “Mini” survives in this base Cooper's chassis, the calamitous ergonomics are an apropos way of connecting the new Cooper to earlier versions. And the car's newfound gentility and charming three-cylinder are mere bonuses for the devotees of quasi-Brit style and hilarious interiors. Parents with teenagers should love it, since zero under-the-shirt shenanigans could be attempted in the back seat. For the insatiably randy, Mini now offers the roomier 4 Door [see page 118], which is even less mini. ■



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# what i'd do differently ...

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12.2.2014

**CHRIS KARAMESINES**

*Now 83, the "Golden Greek" recently defeated the likes of Doug Kalitta and Brittany Force in NHRA Top Fuel drag racing. And he's still not ready for Sunnyside Acres.*

**C/D:** You first won a drag race in 1952?

**CK:** Yes, at Half Day, Illinois, in my 1936 Ford Phaeton. I still have that car. I haven't missed a year of racing for 62 years.

**C/D:** Your first NHRA race was in 1964. How has that scene changed?

**CK:** When I was young, I started building my own dragsters after looking through racing magazines. I didn't have any money to buy one and didn't know anyone else in the Chicago area in the early '50s who was building dragsters. Same with engine work. But as time passed, guys were able to do it better than me. The big thing was going to motors in the rear; when something blew up, you didn't get engine parts in the face.

**C/D:** How do you stay in shape?

**CK:** I don't take any meds, my blood pressure is always normal. I go to the shop every day and work. In the winter, my wife, Sandy, tries to give me vitamins, but I hide them in my recliner. I used to drink Chivas Regal scotch, but I drink Dewar's and water now. Much milder and better. You should try it. My FAA physical is perfect every year, and my liver is fine. Maybe the Dewar's helps.

**C/D:** And your reaction times?

**CK:** Some people think my reactions have slowed, but a lot of the time the car isn't running right and I'm checking gauges. I surprise the other drivers once in a while when I play the lights.

**C/D:** Who's the best Top Fuel driver?

**CK:** I am. I think I'm the smartest because I'll shut it off if I think something's not right.

**C/D:** You haven't done a full season in a while.

**CK:** I don't have the money. I wouldn't know what it's like to fly to a race. I work at my shop every day getting my motors ready, pack the trailer, drive the truck and trailer to the race.

**C/D:** You have "lifetime sponsorships"?

**CK:** Yes, first from Bob Strange, of Strange Engineering. We've been friends for over 60 years. Then my wife had to fill out sponsorship forms for NHRA every year. She wrote, "Can we just save time and paperwork and ask if Forrest Lucas [of Lucas Oil] would sponsor us?" Well, I don't think Forrest figured I'd have too many more years to race! So I think I'm the only person in any kind of racing to have two lifetime sponsors. And it's gotten better this year with Don Schumacher lending me a dragster.

**C/D:** There's been a decades-long dispute about who made the first 200-mph pass—you or Don Garlits.

**CK:** No dispute. I made a 204-mph [unofficially 204.54 mph] pass in Alton, Illinois [in 1960]. Garlits was there. He saw it.

**C/D:** What was your worst crash?

**CK:** Gainesville in '74. Broke my kneecap. Gainesville was the best place to get hurt. A doctor at Shands Hospital moved my kneecap back in place, and it's been fine since.

**C/D:** You were once a tire tester?



**CK:** For Goodyear and Firestone. I did tire testing from about '68 through '72, running front-end dragsters with chassis built by Kent Fuller.

**C/D:** Any hot dates with Linda Vaughn?

**CK:** She and I would go out with a group of people years ago. Nice person. Sandy and I think the world of her.

**C/D:** You raced against Andy Granatelli?

**CK:** Yes, 1952 through about '55. He had a 1940 Ford and I had the '36 Ford. He liked putting Cadillac motors in his Fords.

**C/D:** There's a myth that you made millions in the pizza biz.

**CK:** I was never in the restaurant business. Greek's Pizzeria in Valparaiso, Indiana, belongs to my half-brother Mike. I owned a machine-shop business and would do motors and machine work on other racers' cars. Now I just work on my own motors.

**C/D:** Anything cool in your garage?

**CK:** I work on my Italian Fino boat. And I have my 1936 Ford, the all-original 204 Chizler dragster—the first to go 204 mph—and my twin-engine Chrysler dragster. I called my dragsters Chizlers because they had Chrysler motors.

**C/D:** Any thoughts of retirement?

**CK:** As long as I'm not hurting anyone, that's good. I think fans like to see us pull in with my old trailer. I'll know when I'm ready.

**C/D:** Anything you'd have done differently?

**CK:** Not much. I've had a good career, especially the match racing, where you get paid good money to go down the track. But I wish I'd had Sandy in my life when I was younger. She's the best thing that ever happened to me. — JOHN PHILLIPS

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